SWC axioms
SWC problems

SWC001+1.p cond_as_set_x_as_set
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ duplicatefreeP(w) or $\exists y$: (ssIt
((($\neg$ memberP(v, z) and $\neg$ memberP(u, z)) or (memberP(v, z) and memberP(u, z)))) and duplicatefreeP(u))))))) fof(co_1, c

SWC001-1.p cond_as_set_x_as_set
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
duplicatefreeP(sk_3) cnf(co1_7, negated_conjecture)
(ssItem(a) and memberP(sk_3, a)) $\Rightarrow$ memberP(sk_4, a) cnf(co1_8, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ memberP(sk_3, a) cnf(co1_9, negated_conjecture)
duplicatefreeP(sk_1) $\Rightarrow$ ssItem(sk_5) cnf(co1_{10}, negated_conjecture)
duplicatefreeP(sk_1) $\Rightarrow$ (memberP(sk_2, sk_5) or memberP(sk_1, sk_5)) cnf(co1_{11}, negated_conjecture)
(memberP(sk_2, sk_5) and memberP(sk_1, sk_5)) $\Rightarrow$ $\neg$ duplicatefreeP(sk_1) cnf(co1_{12}, negated_conjecture)

SWC002+1.p cond_del_max_x_del_max
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\exists y$: (ssItem(y)
v and app(z, x_1) $= u$ and $\forall x_2$: (ssItem(x_2) $\Rightarrow$ ($\neg$ memberP(v, x_2) or $\neg$ geq(x_2, y) or $y = x_2$))))) or $\forall x_3$: (ssItem(x_3) $\Rightarrow$
$\forall x_4$: (ssList(x_4) $\Rightarrow$ $\forall x_5$: (ssList(x_5) $\Rightarrow$ (app(app(x_4, cons(x_3, nil)), x_5) $\neq x$ or app(x_4, x_5) $\neq w$ or $\exists x_6$: (ssItem(x_6) and $x_3 \neq$
x_6 and memberP(x, x_6) and geq(x_6, x_3)))))))) and ($\neg$ neq(v, nil) or neq(x, nil)))))))) fof(co_1, conjecture)

SWC002-1.p cond_del_max_x_del_max
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf(co1_7, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf(co1_8, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_2 and app(b, c) = sk_1) $\Rightarrow$ (ssItem($\text{sk}_5(c, b, a)$) or n
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_2 and app(b, c) = sk_1) $\Rightarrow$ (memberP($\text{sk}_2, \text{sk}_5(c, b,$
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_2 and app(b, c) = sk_1) $\Rightarrow$ (geq($\text{sk}_5(c, b, a), a$) or ne
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_2 and app(b, c) = sk_1 and $a = \text{sk}_5(c, b, a)$) $\Rightarrow$
neq(sk_2, nil) cnf(co1_{12}, negated_conjecture)
ssItem(sk_6) or neq(sk_2, nil) cnf(co1_{13}, negated_conjecture)
ssList(sk_7) or neq(sk_2, nil) cnf(co1_{14}, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_8)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_7, \mathrm{sk}_8) = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{geq}(a, \mathrm{sk}_6)) \Rightarrow (\mathrm{sk}_6 = a$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil}))$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_2$ and $\mathrm{app}(b, c) = \mathrm{sk}_1$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow$
$\mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_2$ and $\mathrm{app}(b, c) = \mathrm{sk}_1$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow$
$\mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_2$ and $\mathrm{app}(b, c) = \mathrm{sk}_1$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow$
$\mathrm{geq}(\mathrm{sk}_5(c, b, a), a)$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_2$ and $\mathrm{app}(b, c) = \mathrm{sk}_1$ and $a = \mathrm{sk}_5(c, b, a)) \Rightarrow$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{22}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{23}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{24}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{25}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{26}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_7, \mathrm{sk}_8) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{27}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{geq}(a, \mathrm{sk}_6)$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow \mathrm{sk}_6 = a$ $\mathrm{cnf}(\mathrm{co1}_{28}, \mathrm{negated\_conjecture})$

SWC003+1.p cond_filter_ne_segment_x_del_max
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ a
v and $\mathrm{app}(y, x_1) = u$ and $\mathrm{neq}(z, \mathrm{nil}))))$ or $\forall x_2$: $(\mathrm{ssItem}(x_2) \Rightarrow \forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow \forall x_4$: $(\mathrm{ssList}(x_4) \Rightarrow (\mathrm{app}(\mathrm{app}(x_3, \mathrm{cons}(x_2$
x or $\mathrm{app}(x_3, x_4) \neq w$ or $\exists x_5$: $(\mathrm{ssItem}(x_5)$ and $x_2 \neq x_5$ and $\mathrm{memberP}(x, x_5)$ and $\mathrm{geq}(x_5, x_2)))))))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x,$

SWC003-1.p cond_filter_ne_segment_x_del_max
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(a, b), c) = \mathrm{sk}_2$ and $\mathrm{app}(a, c) = \mathrm{sk}_1$ and $\mathrm{neq}(b, \mathrm{nil})) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ cnf
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_7) = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{geq}(a, \mathrm{sk}_5)) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil}))$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(a, b), c) = \mathrm{sk}_2$ and $\mathrm{app}(a, c) = \mathrm{sk}_1$ and $\mathrm{neq}(b, \mathrm{nil})) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ c
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_7) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_7) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{geq}(a, \mathrm{sk}_5)$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow \mathrm{sk}_5 = a$ $\mathrm{cnf}(\mathrm{co1}_{22}, \mathrm{negated\_conjecture})$

SWC004+1.p cond_filter_ne_segment_x_filter_some
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\exists y$: (ssList(y) a
v and app(y, x_1) = u and neq(z, nil)))) or $\forall x_2$: (ssItem(x_2) $\Rightarrow$ $\forall x_3$: (ssList(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $\Rightarrow$ (app(app(x_3, cons(x_2
x or app(x_3, x_4) $\neq w$))))) and ($\neg$ neq(v, nil) or neq(x, nil)))))))) fof(co_1, conjecture)

SWC004-1.p cond_filter_ne_segment_x_filter_some
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf(co1_7, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf(co1_8, negated_conjecture)
(ssList(a) and ssList(b) and ssList(c) and app(app(a, b), c) = sk_2 and app(a, c) = sk_1 and neq(b, nil)) $\Rightarrow$ neq(sk_2, nil) cnf
ssItem(sk_5) or neq(sk_2, nil) cnf(co1_{10}, negated_conjecture)
ssList(sk_6) or neq(sk_2, nil) cnf(co1_{11}, negated_conjecture)
ssList(sk_7) or neq(sk_2, nil) cnf(co1_{12}, negated_conjecture)
app(app(sk_6, cons(sk_5, nil)), sk_7) = sk_4 or neq(sk_2, nil) cnf(co1_{13}, negated_conjecture)
app(sk_6, sk_7) = sk_3 or neq(sk_2, nil) cnf(co1_{14}, negated_conjecture)
(ssList(a) and ssList(b) and ssList(c) and app(app(a, b), c) = sk_2 and app(a, c) = sk_1 and neq(b, nil)) $\Rightarrow$ $\neg$ neq(sk_4, nil) c
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) cnf(co1_{16}, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_6) cnf(co1_{17}, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_7) cnf(co1_{18}, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(app(sk_6, cons(sk_5, nil)), sk_7) = sk_4 cnf(co1_{19}, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(sk_6, sk_7) = sk_3 cnf(co1_{20}, negated_conjecture)

SWC005+1.p cond_filter_ne_segment_x_tail1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\exists y$: (ssList(y) a
v and app(y, x_1) = u and neq(z, nil)))) or $\exists x_2$: (ssList(x_2) and $w \neq x_2$ and tl(x) = x_2 and neq(nil, x))) and ($\neg$ neq(v, nil) or

SWC005-1.p cond_filter_ne_segment_x_tail1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf(co1_7, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf(co1_8, negated_conjecture)
(ssList(a) and ssList(b) and ssList(c) and app(app(a, b), c) = sk_2 and app(a, c) = sk_1 and neq(b, nil)) $\Rightarrow$ neq(sk_2, nil) cnf
(ssList(a) and tl(sk_4) = a and neq(nil, sk_4)) $\Rightarrow$ ($\text{sk}_3 = a$ or neq(sk_2, nil)) cnf(co1_{10}, negated_conjecture)
(ssList(a) and ssList(b) and ssList(c) and app(app(a, b), c) = sk_2 and app(a, c) = sk_1 and neq(b, nil)) $\Rightarrow$ $\neg$ neq(sk_4, nil) c
(ssList(a) and tl(sk_4) = a and neq(nil, sk_4) and neq(sk_4, nil)) $\Rightarrow$ $\text{sk}_3 = a$ cnf(co1_{12}, negated_conjecture)

SWC006+1.p cond_filter_segment_x_filter_segment
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\exists y$: (ssList(y) and $\exists z$: (ssList(z) v and app$(y, x_1) = u$))) or $\forall x_2$: (ssList(x_2) $\Rightarrow$ $\forall x_3$: (ssList(x_3) $\Rightarrow$ $\forall x_4$: ($\neg$ ssList(x_4) or app(app$(x_2, x_3), x_4) \neq$ x or app$(x_2, x_4) \neq w$))))))) fof(co$_1$, conjecture)

SWC006-1.p cond_filter_segment_x_filter_segment
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
(ssList(a) and ssList(b) and ssList(c) and app(app$(a, b), c)$ = sk$_2$) $\Rightarrow$ app$(a, c) \neq$ sk$_1$ cnf(co1$_7$, negated_conjecture)
ssList(sk$_5$) cnf(co1$_8$, negated_conjecture)
ssList(sk$_6$) cnf(co1$_9$, negated_conjecture)
ssList(sk$_7$) cnf(co1$_{10}$, negated_conjecture)
app(app(sk$_5$, sk$_6$), sk$_7$) = sk$_4$ cnf(co1$_{11}$, negated_conjecture)
app(sk$_5$, sk$_7$) = sk$_3$ cnf(co1$_{12}$, negated_conjecture)

SWC007+1.p cond_filter_segment_x_initialize
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ (nil $\neq$ w or $v \neq x$ or $u \neq$ w or $\exists y$: (ssList(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app$(y, z), x_1) = v$ and app$(y, x_1) = u$))))))))) fof(co$_1$, c

SWC007-1.p cond_filter_segment_x_initialize
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
nil = sk$_3$ cnf(co1$_5$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_6$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_7$, negated_conjecture)
(ssList(a) and ssList(b) and ssList(c) and app(app$(a, b), c)$ = sk$_2$) $\Rightarrow$ app$(a, c) \neq$ sk$_1$ cnf(co1$_8$, negated_conjecture)

SWC008+1.p cond_filter_segment_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ frontsegP(x, w) or $\neg$ equalelem v and app$(y, x_1) = u$))) or $\exists x_2$: (ssList(x_2) and neq(w, x_2) and frontsegP(x, x_2) and segmentP(x_2, w) and equalelemsP(x_2))))

SWC008-1.p cond_filter_segment_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)

$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
frontsegP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_7$, negated_conjecture)
equalelemsP(sk_3) cnf($\mathrm{co1}_8$, negated_conjecture)
(ssList(a) and ssList(b) and ssList(c) and app(app(a, b), c) = sk_2) $\Rightarrow$ app(a, c) $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_9$, negated_conjecture)
(ssList(a) and neq(sk_3, a) and frontsegP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ equalelemsP(a) cnf($\mathrm{co1}_{10}$, negated_conjectur

SWC009+1.p cond_filter_segment_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssList(y) and $\exists z$: (ssList(z)
v and app(y, x_1) = u))) or $\forall x_2$: (ssList(x_2) $\Rightarrow$ (app(w, x_2) $\neq x$ or $\neg$ strictorderedP(w) or $\exists x_3$: (ssItem(x_3) and $\exists x_4$: (ssList(x
x_2 and $\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ssList(x_6) and app(x_6, cons(x_5, nil)) = w and lt(x_5, x_3))))))) or (nil $\neq x$ and nil =
w))))))) fof(co_1, conjecture)

SWC009-1.p cond_filter_segment_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
(ssList(a) and ssList(b) and ssList(c) and app(app(a, b), c) = sk_2) $\Rightarrow$ app(a, c) $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_7$, negated_conjecture)
ssList(sk_5) cnf($\mathrm{co1}_8$, negated_conjecture)
app($\mathrm{sk}_3, \mathrm{sk}_5$) = sk_4 cnf($\mathrm{co1}_9$, negated_conjecture)
strictorderedP(sk_3) cnf($\mathrm{co1}_{10}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_5 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$
$\neg$ lt(c, a) cnf($\mathrm{co1}_{11}$, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{12}$, negated_conjecture)

SWC010+1.p cond_filter_some_x_del_max
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ((¬ neq(v, nil) or $\exists y$: (ssItem(y)
v and app(z, x_1) = u))) or $\forall x_2$: (ssItem(x_2) $\Rightarrow$ $\forall x_3$: (ssList(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $\Rightarrow$ (app(app(x_3, cons(x_2, nil)), x_4) $\neq$
x or app(x_3, x_4) $\neq w$ or $\exists x_5$: (ssItem(x_5) and $x_2 \neq x_5$ and memberP(x, x_5) and geq(x_5, x_2))))))) and (¬ neq(v, nil) or neq(x,

SWC010-1.p cond_filter_some_x_del_max
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_8$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_2 and app(b, c) = sk_1) $\Rightarrow$ neq(sk_2, nil) cnf(co1
ssItem(sk_5) or neq(sk_2, nil) cnf($\mathrm{co1}_{10}$, negated_conjecture)
ssList(sk_6) or neq(sk_2, nil) cnf($\mathrm{co1}_{11}$, negated_conjecture)
ssList(sk_7) or neq(sk_2, nil) cnf($\mathrm{co1}_{12}$, negated_conjecture)

$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_7) = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{geq}(a, \mathrm{sk}_5)) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil}))$ $\quad \mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_2$ and $\mathrm{app}(b, c) = \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co}$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\quad \mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\quad \mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_7)$ $\quad \mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_7) = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_7) = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{geq}(a, \mathrm{sk}_5)$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow \mathrm{sk}_5 = a$ $\quad \mathrm{cnf}(\mathrm{co1}_{22}, \mathrm{negated\_conjecture})$

SWC011+1.p cond_filter_some_x_filter_some
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssItem}(y)$
v and $\mathrm{app}(z, x_1) = u)))$ or $\forall x_2$: $(\mathrm{ssItem}(x_2) \Rightarrow \forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow \forall x_4$: $(\mathrm{ssList}(x_4) \Rightarrow (\mathrm{app}(\mathrm{app}(x_3, \mathrm{cons}(x_2, \mathrm{nil})), x_4) \neq$
x or $\mathrm{app}(x_3, x_4) \neq w)))))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})))))))$ $\quad \mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC011-1.p cond_filter_some_x_filter_some
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\quad \mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\quad \mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\quad \mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\quad \mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_2$ and $\mathrm{app}(b, c) = \mathrm{sk}_1) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_9$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_7) = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_2$ and $\mathrm{app}(b, c) = \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co}$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\quad \mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\quad \mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_7)$ $\quad \mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_7) = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_7) = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$

SWC012+1.p cond_filter_some_x_lead
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssItem}(y)$
v and $\mathrm{app}(z, x_1) = u)))$ or $\forall x_2$: $(\mathrm{ssItem}(x_2) \Rightarrow \mathrm{app}(w, \mathrm{cons}(x_2, \mathrm{nil})) \neq x))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})))))))$ $\quad \mathrm{fof}(\mathrm{co}_1,$

SWC012-1.p cond_filter_some_x_lead
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\quad \mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\quad \mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$

$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_2$ and $\mathrm{app}(b, c) = \mathrm{sk}_1) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_2$ and $\mathrm{app}(b, c) = \mathrm{sk}_1) \Rightarrow \neg\,\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co}$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_3, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC013+1.p cond_head1_x_head1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ a
y and $\exists z$: $(\mathrm{ssItem}(z)$ and $\mathrm{cons}(z, \mathrm{nil}) = y$ and $\mathrm{hd}(x) = z$ and $\mathrm{neq}(\mathrm{nil}, x)))$ or $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $u = x_1$ and $\exists x_2$: $(\mathrm{ssItem}(x_2$
x_1 and $\mathrm{hd}(v) = x_2$ and $\mathrm{neq}(\mathrm{nil}, v))))$ and $(\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC013-1.p cond_head1_x_head1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{cons}(b, \mathrm{nil}) = a$ and $\mathrm{hd}(\mathrm{sk}_4) = b$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)) \Rightarrow (\mathrm{sk}_3 = a$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil}))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{ne}$
$(\mathrm{ssList}(a)$ and $\mathrm{sk}_1 = a$ and $\mathrm{ssItem}(b)$ and $\mathrm{cons}(b, \mathrm{nil}) = a$ and $\mathrm{hd}(\mathrm{sk}_2) = b$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_2)) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{n}$
$(\mathrm{ssList}(a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{cons}(b, \mathrm{nil}) = a$ and $\mathrm{hd}(\mathrm{sk}_4) = b$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow \mathrm{sk}_3 = a$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{n}$
$(\mathrm{ssList}(a)$ and $\mathrm{sk}_1 = a$ and $\mathrm{ssItem}(b)$ and $\mathrm{cons}(b, \mathrm{nil}) = a$ and $\mathrm{hd}(\mathrm{sk}_2) = b$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_2)) \Rightarrow \neg\,\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12},$

SWC014+1.p cond_head2_x_head3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ a
y and $\exists z$: $(\mathrm{ssList}(z)$ and $\mathrm{tl}(v) = z$ and $\mathrm{app}(u, z) = y$ and $\mathrm{neq}(\mathrm{nil}, v)))$ or $\forall x_1$: $(\mathrm{ssItem}(x_1) \Rightarrow \forall x_2$: $(\mathrm{ssList}(x_2) \Rightarrow$
$(\mathrm{cons}(x_1, \mathrm{nil}) \neq w$ or $\mathrm{app}(\mathrm{cons}(x_1, \mathrm{nil}), x_2) \neq x))))$ and $(\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC014-1.p cond_head2_x_head3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$

$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{sk}_2 = a$ and $\mathrm{ssList}(b)$ and $\mathrm{tl}(\mathrm{sk}_2) = b$ and $\mathrm{app}(\mathrm{sk}_1, b) = a$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_2)) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{nega}$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{sk}_2 = a$ and $\mathrm{ssList}(b)$ and $\mathrm{tl}(\mathrm{sk}_2) = b$ and $\mathrm{app}(\mathrm{sk}_1, b) = a$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_2)) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{n}$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC015+1.p cond_head3_x_head2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ a
y and $\exists z$: $(\mathrm{ssList}(z)$ and $\mathrm{tl}(x) = z$ and $\mathrm{app}(w, z) = y$ and $\mathrm{neq}(\mathrm{nil}, x)))$ or $\exists x_1$: $(\mathrm{ssItem}(x_1)$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$ and $\mathrm{cons}(x_1,$
u and $\mathrm{app}(\mathrm{cons}(x_1, \mathrm{nil}), x_2) = v)))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC015-1.p cond_head3_x_head2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{tl}(\mathrm{sk}_4) = b$ and $\mathrm{app}(\mathrm{sk}_3, b) = a$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)) \Rightarrow (\mathrm{sk}_4 = a$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil}))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{nega}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{cons}(a, \mathrm{nil}) = \mathrm{sk}_1$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_2) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjectu}$
$(\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{tl}(\mathrm{sk}_4) = b$ and $\mathrm{app}(\mathrm{sk}_3, b) = a$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow \mathrm{sk}_4 = a$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{neg}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{cons}(a, \mathrm{nil}) = \mathrm{sk}_1$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_2) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conje}$

SWC016+1.p cond_id_front_total1_x_id_front_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} =$
$x)$ or $(\forall y$: $(\mathrm{ssList}(y) \Rightarrow (\neg\, \mathrm{neq}(y, \mathrm{nil})$ or $\neg\, \mathrm{frontsegP}(x, y)$ or $\neg\, \mathrm{frontsegP}(w, y)))$ and $\mathrm{neq}(x, \mathrm{nil}))$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} =$
$u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists z$: $(\mathrm{ssList}(z)$ and $\mathrm{neq}(z, \mathrm{nil})$ and $\mathrm{frontsegP}(v, z)$ and $\mathrm{frontsegP}(u, z)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC016-1.p cond_id_front_total1_x_id_front_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_5, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{frontsegP}(\mathrm{sk}_3, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{frontsegP}(\mathrm{sk}_2, a)$ and $\mathrm{frontsegP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{frontsegP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{frontsegP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC017+1.p cond_id_front_total1_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ and $\mathrm{neq}(y, \mathrm{nil})$ and $\mathrm{frontsegP}(v, y)$ and $\mathrm{frontsegP}(u, y))))$ or $((\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w)$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{frontsegP}(x, w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC017-1.p cond_id_front_total1_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{frontsegP}(\mathrm{sk}_2, a)$ and $\mathrm{frontsegP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{frontsegP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{frontsegP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC018+1.p cond_id_front_total1_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$ $(\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{equalelemsP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$ $w)))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w)$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists x_3$: $(\mathrm{ssList}(x_3)$ and $\mathrm{neq}(x_3, \mathrm{nil})$ and $\mathrm{frontsegP}(u$

SWC018-1.p cond_id_front_total1_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_con}$

$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{11}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
($\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{frontsegP}(\mathrm{sk}_2, a)$ and $\mathrm{frontsegP}(\mathrm{sk}_1, a)$) $\Rightarrow \mathrm{nil} = \mathrm{sk}_2$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ cnf($\mathrm{co1}_{14}$, negated_conjecture)
($\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{frontsegP}(\mathrm{sk}_2, a)$) $\Rightarrow \neg\, \mathrm{frontsegP}(\mathrm{sk}_1, a)$ cnf($\mathrm{co1}_{15}$, negated_conjecture)

SWC019+1.p cond_id_front_total2_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or $x \neq w$ or $\exists y$: ($\mathrm{ssList}(y)$ and $\mathrm{neq}(y, \mathrm{nil})$ and $\mathrm{frontsegP}(v, y)$ and $\mathrm{frontsegP}(u, y)$) or ($\mathrm{nil} = v$ and $\mathrm{nil} = u$)))))) fof(co_1, conjectur

SWC019-1.p cond_id_front_total2_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_1$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_2)$ cnf($\mathrm{co1}_2$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_3)$ cnf($\mathrm{co1}_3$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_4)$ cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
$\mathrm{sk}_4 = \mathrm{sk}_3$ cnf($\mathrm{co1}_7$, negated_conjecture)
($\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{frontsegP}(\mathrm{sk}_2, a)$) $\Rightarrow \neg\, \mathrm{frontsegP}(\mathrm{sk}_1, a)$ cnf($\mathrm{co1}_8$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ cnf($\mathrm{co1}_9$, negated_conjecture)

SWC020+1.p cond_id_front_total2_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: ($\mathrm{ssList}(y)$ and $\mathrm{neq}(y, \mathrm{nil})$ an v and $\mathrm{nil} = u$) or (($\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w$) and ($\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{frontsegP}(x, w)$)))))))) fof($\mathrm{co}_1$, conjecture)

SWC020-1.p cond_id_front_total2_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_1$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_2)$ cnf($\mathrm{co1}_2$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_3)$ cnf($\mathrm{co1}_3$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_4)$ cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
($\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{frontsegP}(\mathrm{sk}_2, a)$) $\Rightarrow \neg\, \mathrm{frontsegP}(\mathrm{sk}_1, a)$ cnf($\mathrm{co1}_7$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ cnf($\mathrm{co1}_8$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ cnf($\mathrm{co1}_{11}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ cnf($\mathrm{co1}_{12}$, negated_conjecture)

SWC021+1.p cond_id_front_total2_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\, \mathrm{frontsegP}(x, w)$ or $\neg$ strictorde v and $\mathrm{nil} = u$)))))) fof(co_1, conjecture)

SWC021-1.p cond_id_front_total2_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{neq}(a, \mathrm{nil}) \text{ and } \mathrm{frontsegP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{frontsegP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{neq}(\mathrm{sk}_3, a) \text{ and } \mathrm{frontsegP}(\mathrm{sk}_4, a) \text{ and } \mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{strictorderedP}(a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conject}$
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC022+1.p cond_id_front_x_head1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } ((\neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \exists y$: $(\mathrm{ssList}(y)$ a
z and $\exists x_1$: $(\mathrm{ssItem}(x_1)$ and $\mathrm{cons}(x_1, \mathrm{nil}) = z$ and $\mathrm{hd}(x) = x_1$ and $\mathrm{neq}(\mathrm{nil}, x))))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \mathrm{neq}(x, \mathrm{nil})))))))$ fof(

SWC022-1.p cond_id_front_x_head1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil}) \text{ or } \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{neq}(a, \mathrm{nil}) \text{ and } \mathrm{frontsegP}(\mathrm{sk}_2, a) \text{ and } \mathrm{frontsegP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{ssItem}(b) \text{ and } \mathrm{cons}(b, \mathrm{nil}) = a \text{ and } \mathrm{hd}(\mathrm{sk}_4) = b \text{ and } \mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)) \Rightarrow (\mathrm{sk}_3 = a \text{ or } \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil}))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{n}$
$(\mathrm{ssList}(a) \text{ and } \mathrm{neq}(a, \mathrm{nil}) \text{ and } \mathrm{frontsegP}(\mathrm{sk}_2, a) \text{ and } \mathrm{frontsegP}(\mathrm{sk}_1, a)) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{ssItem}(b) \text{ and } \mathrm{cons}(b, \mathrm{nil}) = a \text{ and } \mathrm{hd}(\mathrm{sk}_4) = b \text{ and } \mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4) \text{ and } \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow \mathrm{sk}_3 = a$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{n}$

SWC023+1.p cond_id_front_x_id_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \exists y$: $(\mathrm{ssList}(y)$ an
$(\neg\, \mathrm{neq}(z, \mathrm{nil}) \text{ or } \neg\, \mathrm{frontsegP}(x, z) \text{ or } \neg\, \mathrm{frontsegP}(w, z)))$ and $(\mathrm{nil} \neq x \text{ or } \mathrm{nil} \neq w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC023-1.p cond_id_front_x_id_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$

$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssList(a) and neq(a, nil) and frontsegP(sk_2, a)) $\Rightarrow$ $\neg$ frontsegP(sk_1, a) cnf($\mathrm{co1}_8$, negated_conjecture)
ssList(sk_5) or nil = sk_4 cnf($\mathrm{co1}_9$, negated_conjecture)
ssList(sk_5) or nil = sk_3 cnf($\mathrm{co1}_{10}$, negated_conjecture)
neq(sk_5, nil) or nil = sk_4 cnf($\mathrm{co1}_{11}$, negated_conjecture)
frontsegP(sk_4, sk_5) or nil = sk_4 cnf($\mathrm{co1}_{12}$, negated_conjecture)
frontsegP(sk_3, sk_5) or nil = sk_4 cnf($\mathrm{co1}_{13}$, negated_conjecture)
neq(sk_5, nil) or nil = sk_3 cnf($\mathrm{co1}_{14}$, negated_conjecture)
frontsegP(sk_4, sk_5) or nil = sk_3 cnf($\mathrm{co1}_{15}$, negated_conjecture)
frontsegP(sk_3, sk_5) or nil = sk_3 cnf($\mathrm{co1}_{16}$, negated_conjecture)

SWC024+1.p cond_id_front_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssList(y) an
(app(w, z) $\neq x$ or $\neg$ equalelemsP(w) or $\exists x_1$: (ssItem(x_1) and $\exists x_2$: (ssList(x_2) and app(cons(x_1, nil), x_2) = z and $\exists x_3$: (ssList(
w))))) or (nil $\neq x$ and nil = w)))))) fof(co_1, conjecture)

SWC024-1.p cond_id_front_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssList(a) and neq(a, nil) and frontsegP(sk_2, a)) $\Rightarrow$ $\neg$ frontsegP(sk_1, a) cnf($\mathrm{co1}_8$, negated_conjecture)
ssList(sk_5) cnf($\mathrm{co1}_9$, negated_conjecture)
app(sk_3, sk_5) = sk_4 cnf($\mathrm{co1}_{10}$, negated_conjecture)
equalelemsP(sk_3) cnf($\mathrm{co1}_{11}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_5 and ssList(c)) $\Rightarrow$ app(c, cons(a, nil)) $\neq \mathrm{sk}_3$ cnf($\mathrm{co1}_{12}$, negated_con
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{13}$, negated_conjecture)

SWC025+1.p cond_id_nil_iff_x_as_set
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ duplicatefreeP(w) or $\exists y$: (ssIt
v or nil = u) and (nil $\neq u$ or nil = v))))))) fof(co_1, conjecture)

SWC025-1.p cond_id_nil_iff_x_as_set
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
duplicatefreeP(sk_3) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and memberP(sk_3, a)) $\Rightarrow$ memberP(sk_4, a) cnf($\mathrm{co1}_8$, negated_conjecture)

$(\text{ssItem}(a) \text{ and } \text{memberP}(\text{sk}_4, a)) \Rightarrow \text{memberP}(\text{sk}_3, a)$ cnf(co1_9, negated_conjecture)
$\text{nil} = \text{sk}_2 \text{ or } \text{nil} = \text{sk}_1$ cnf(co1_{10}, negated_conjecture)
$\text{nil} = \text{sk}_2 \Rightarrow \text{nil} = \text{sk}_2$ cnf(co1_{11}, negated_conjecture)
$\text{nil} = \text{sk}_1 \Rightarrow \text{nil} = \text{sk}_1$ cnf(co1_{12}, negated_conjecture)
$\text{nil} = \text{sk}_1 \Rightarrow \text{nil} \neq \text{sk}_2$ cnf(co1_{13}, negated_conjecture)

SWC026+1.p cond_id_nil_iff_x_id_nil_iff
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (nil $\neq x$ and nil $= w$) or (nil $\neq w$ and nil $= x$) or ((nil $\neq v$ or nil $= u$) and (nil $\neq u$ or nil $= v$))))))) fof(co_1, conjecture)

SWC026-1.p cond_id_nil_iff_x_id_nil_iff
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\text{ssList}(\text{sk}_1)$ cnf(co1_1, negated_conjecture)
$\text{ssList}(\text{sk}_2)$ cnf(co1_2, negated_conjecture)
$\text{ssList}(\text{sk}_3)$ cnf(co1_3, negated_conjecture)
$\text{ssList}(\text{sk}_4)$ cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
$\text{nil} = \text{sk}_3 \Rightarrow \text{nil} = \text{sk}_4$ cnf(co1_7, negated_conjecture)
$\text{nil} = \text{sk}_4 \Rightarrow \text{nil} = \text{sk}_3$ cnf(co1_8, negated_conjecture)
$\text{nil} = \text{sk}_2 \text{ or } \text{nil} = \text{sk}_1$ cnf(co1_9, negated_conjecture)
$\text{nil} = \text{sk}_2 \Rightarrow \text{nil} = \text{sk}_2$ cnf(co1_{10}, negated_conjecture)
$\text{nil} = \text{sk}_1 \Rightarrow \text{nil} = \text{sk}_1$ cnf(co1_{11}, negated_conjecture)
$\text{nil} = \text{sk}_1 \Rightarrow \text{nil} \neq \text{sk}_2$ cnf(co1_{12}, negated_conjecture)

SWC027+1.p cond_id_nil_iff_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ($\forall y$: (ssItem(y) $\Rightarrow$ (cons(y, nil) $\neq w$ or $\neg$ memberP(x, y) or $\exists z$: (ssItem(z) and $y \neq z$ and memberP(x, z) and $y \leq z$))) and (nil $\neq x$ or nil $\neq w$)) or ((nil $\neq v$ or nil $= u$) and (nil $\neq u$ or nil $= v$))))))) fof(co_1, conjecture)

SWC027-1.p cond_id_nil_iff_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\text{ssList}(\text{sk}_1)$ cnf(co1_1, negated_conjecture)
$\text{ssList}(\text{sk}_2)$ cnf(co1_2, negated_conjecture)
$\text{ssList}(\text{sk}_3)$ cnf(co1_3, negated_conjecture)
$\text{ssList}(\text{sk}_4)$ cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
$\text{ssItem}(\text{sk}_5) \text{ or } \text{nil} = \text{sk}_4$ cnf(co1_7, negated_conjecture)
$\text{ssItem}(\text{sk}_5) \text{ or } \text{nil} = \text{sk}_3$ cnf(co1_8, negated_conjecture)
$\text{cons}(\text{sk}_5, \text{nil}) = \text{sk}_3 \text{ or } \text{nil} = \text{sk}_4$ cnf(co1_9, negated_conjecture)
$\text{memberP}(\text{sk}_4, \text{sk}_5) \text{ or } \text{nil} = \text{sk}_4$ cnf(co1_{10}, negated_conjecture)
$(\text{ssItem}(a) \text{ and } \text{memberP}(\text{sk}_4, a) \text{ and } \text{sk}_5 \leq a) \Rightarrow (\text{sk}_5 = a \text{ or } \text{nil} = \text{sk}_4)$ cnf(co1_{11}, negated_conjecture)
$\text{cons}(\text{sk}_5, \text{nil}) = \text{sk}_3 \text{ or } \text{nil} = \text{sk}_3$ cnf(co1_{12}, negated_conjecture)
$\text{memberP}(\text{sk}_4, \text{sk}_5) \text{ or } \text{nil} = \text{sk}_3$ cnf(co1_{13}, negated_conjecture)
$(\text{ssItem}(a) \text{ and } \text{memberP}(\text{sk}_4, a) \text{ and } \text{sk}_5 \leq a) \Rightarrow (\text{sk}_5 = a \text{ or } \text{nil} = \text{sk}_3)$ cnf(co1_{14}, negated_conjecture)
$\text{nil} = \text{sk}_2 \text{ or } \text{nil} = \text{sk}_1$ cnf(co1_{15}, negated_conjecture)

$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ cnf($\mathrm{co1}_{16}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{nil} = \mathrm{sk}_1$ cnf($\mathrm{co1}_{17}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_2$ cnf($\mathrm{co1}_{18}$, negated_conjecture)

SWC028+1.p cond_id_nil_iff_x_ne_segment_rear_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\mathrm{nil} \neq v$ or $\mathrm{nil} = u$) and ($\mathrm{nil} \neq u$ or $\mathrm{nil} = v$)) or (($\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w$) and ($\neg\,\mathrm{neq}(w, \mathrm{nil})$ or $\neg\,\mathrm{rearsegP}(x, w)$)))))))) fof($\mathrm{co}_1$, conjecture)

SWC028-1.p cond_id_nil_iff_x_ne_segment_rear_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_1$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_2)$ cnf($\mathrm{co1}_2$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_3)$ cnf($\mathrm{co1}_3$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_4)$ cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{nil} = \mathrm{sk}_1$ cnf($\mathrm{co1}_7$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ cnf($\mathrm{co1}_8$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{nil} = \mathrm{sk}_1$ cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_2$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ cnf($\mathrm{co1}_{11}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ cnf($\mathrm{co1}_{14}$, negated_conjecture)

SWC029+1.p cond_id_nil_iff_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ($\mathrm{nil} \neq w$ and $\mathrm{nil} = x$) or ($\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: (ssList(z) $\Rightarrow$ ($\mathrm{app}(\mathrm{cons}(y, \mathrm{nil}), z) \neq x$ or $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) \neq w$))) and neq($x$, nil)) or (($\mathrm{nil} \neq v$ or $\mathrm{nil} = u$) and ($\mathrm{nil} \neq u$ or $\mathrm{nil} = v$))))))) fof(co_1, conjecture)

SWC029-1.p cond_id_nil_iff_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_1$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_2)$ cnf($\mathrm{co1}_2$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_3)$ cnf($\mathrm{co1}_3$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_4)$ cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_7$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ cnf($\mathrm{co1}_8$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_4$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_3$ cnf($\mathrm{co1}_{11}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{nil} = \mathrm{sk}_1$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{nil} = \mathrm{sk}_1$ cnf($\mathrm{co1}_{14}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_2$ cnf($\mathrm{co1}_{15}$, negated_conjecture)

SWC030+1.p cond_id_nil_iff_x_rotate
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ $\forall z$: (ssList(z) $\Rightarrow$ (app(y, z) $\neq x$ or app(z, y) $\neq w$))) or ((nil $\neq v$ or nil $= u$) and (nil $\neq u$ or nil $= v$))))))) fof(co_1, conject

SWC030-1.p cond_id_nil_iff_x_rotate
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssList(sk_5) cnf(co1_7, negated_conjecture)
ssList(sk_6) cnf(co1_8, negated_conjecture)
$\text{app}(\text{sk}_5, \text{sk}_6) = \text{sk}_4$ cnf(co1_9, negated_conjecture)
$\text{app}(\text{sk}_6, \text{sk}_5) = \text{sk}_3$ cnf(co1_{10}, negated_conjecture)
nil $= \text{sk}_2$ or nil $= \text{sk}_1$ cnf(co1_{11}, negated_conjecture)
nil $= \text{sk}_2 \Rightarrow$ nil $= \text{sk}_2$ cnf(co1_{12}, negated_conjecture)
nil $= \text{sk}_1 \Rightarrow$ nil $= \text{sk}_1$ cnf(co1_{13}, negated_conjecture)
nil $= \text{sk}_1 \Rightarrow$ nil $\neq \text{sk}_2$ cnf(co1_{14}, negated_conjecture)

SWC031+1.p cond_id_nil_iff_x_run_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ frontsegP(x, w) or $\neg$ totalorde
v or nil $= u$) and (nil $\neq u$ or nil $= v$))))))) fof(co_1, conjecture)

SWC031-1.p cond_id_nil_iff_x_run_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
frontsegP(sk_4, sk_3) cnf(co1_7, negated_conjecture)
totalorderedP(sk_3) cnf(co1_8, negated_conjecture)
(ssList(a) and neq(sk_3, a) and frontsegP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ totalorderedP(a) cnf(co1_9, negated_conjectu
nil $= \text{sk}_2$ or nil $= \text{sk}_1$ cnf(co1_{10}, negated_conjecture)
nil $= \text{sk}_2 \Rightarrow$ nil $= \text{sk}_2$ cnf(co1_{11}, negated_conjecture)
nil $= \text{sk}_1 \Rightarrow$ nil $= \text{sk}_1$ cnf(co1_{12}, negated_conjecture)
nil $= \text{sk}_1 \Rightarrow$ nil $\neq \text{sk}_2$ cnf(co1_{13}, negated_conjecture)

SWC032+1.p cond_id_nil_iff_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ (app(w, y) $\neq x$ or $\neg$ strictorderedP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) = y and $\exists x_2$: (ssItem(z w and lt(x_2, z))))))) or (nil $\neq x$ and nil = w) or ((nil $\neq v$ or nil = u) and (nil $\neq u$ or nil = v))))))) fof(co_1, conjecture)

SWC032-1.p cond_id_nil_iff_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssList(sk_5) cnf(co1_7, negated_conjecture)
app(sk_3, sk_5) = sk_4 cnf(co1_8, negated_conjecture)
strictorderedP(sk_3) cnf(co1_9, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_5 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$ $\neg$ lt(c, a) cnf(co1_{10}, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf(co1_{11}, negated_conjecture)
nil = sk_2 or nil = sk_1 cnf(co1_{12}, negated_conjecture)
nil = sk_2 $\Rightarrow$ nil = sk_2 cnf(co1_{13}, negated_conjecture)
nil = sk_1 $\Rightarrow$ nil = sk_1 cnf(co1_{14}, negated_conjecture)
nil = sk_1 $\Rightarrow$ nil $\neq$ sk_2 cnf(co1_{15}, negated_conjecture)

SWC033+1.p cond_id_nil_iff_x_set_min_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and (($\neg$ memberP
($\neg$ memberP(x, z) or $\neg\, z \leq y$ or $y = z$)) and memberP(x, y)) or (memberP(w, y) and ($\neg$ memberP(x, y) or $\exists z$: (ssItem(z) and
z and memberP(x, z) and $z \leq y$))))) or ((nil $\neq v$ or nil = u) and (nil $\neq u$ or nil = v))))))) fof(co_1, conjecture)

SWC033-1.p cond_id_nil_iff_x_set_min_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or ssItem($\text{sk}_5(a)$)) cnf(co1_7, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or memberP($\text{sk}_4, \text{sk}_5(a)$)) cnf($\text{co1}_8$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or $\text{sk}_5(a) \leq a$) cnf(co1_9, negated_conjecture)
(ssItem(a) and $a = \text{sk}_5(a)$ and memberP(sk_4, a)) $\Rightarrow$ memberP(sk_3, a) cnf(co1_{10}, negated_conjecture)
(ssItem(a) and memberP(sk_3, a)) $\Rightarrow$ memberP(sk_4, a) cnf(co1_{11}, negated_conjecture)
(ssItem(a) and memberP(sk_3, a) and ssItem(b) and memberP(sk_4, b) and $b \leq a$) $\Rightarrow$ $a = b$ cnf(co1_{12}, negated_conjecture)
nil = sk_2 or nil = sk_1 cnf(co1_{13}, negated_conjecture)
nil = sk_2 $\Rightarrow$ nil = sk_2 cnf(co1_{14}, negated_conjecture)
nil = sk_1 $\Rightarrow$ nil = sk_1 cnf(co1_{15}, negated_conjecture)
nil = sk_1 $\Rightarrow$ nil $\neq$ sk_2 cnf(co1_{16}, negated_conjecture)

SWC034+1.p cond_id_nil_iff_x_set_unique_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.

include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and (($\neg$ memberP
$\neg$ segmentP(x, app(app(cons(y, nil), z), cons(y, nil)))) and memberP(x, y)) or (memberP(w, y) and ($\neg$ memberP(x, y) or $\exists z$: (
v or nil $= u$) and (nil $\neq u$ or nil $= v$))))))) fof(co_1, conjecture)

SWC034-1.p cond_id_nil_iff_x_set_unique_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or ssList($sk_5(a)$)) cnf($co1_7$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or segmentP(sk_4, app(app(cons(a, nil), $sk_5(a)$), cons(a, nil)))) cnf(
(ssItem(a) and memberP(sk_3, a)) $\Rightarrow$ memberP(sk_4, a) cnf($co1_9$, negated_conjecture)
(ssItem(a) and memberP(sk_3, a) and ssList(b)) $\Rightarrow$ $\neg$ segmentP(sk_4, app(app(cons(a, nil), b), cons(a, nil))) cnf($co1_{10}$, negat
nil $= sk_2$ or nil $= sk_1$ cnf($co1_{11}$, negated_conjecture)
nil $= sk_2$ $\Rightarrow$ nil $= sk_2$ cnf($co1_{12}$, negated_conjecture)
nil $= sk_1$ $\Rightarrow$ nil $= sk_1$ cnf($co1_{13}$, negated_conjecture)
nil $= sk_1$ $\Rightarrow$ nil $\neq sk_2$ cnf($co1_{14}$, negated_conjecture)

SWC035+1.p cond_id_nil_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ (nil $\neq v$ or $v \neq x$ or $u \neq w$ or $x \neq$ w or nil $= u$))))) fof(co_1, conjecture)

SWC035-1.p cond_id_nil_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
nil $= sk_2$ cnf($co1_5$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_6$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_7$, negated_conjecture)
$sk_4 = sk_3$ cnf($co1_8$, negated_conjecture)
nil $\neq sk_1$ cnf($co1_9$, negated_conjecture)

SWC036+1.p cond_id_nil_x_id_nil
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ (nil $\neq v$ or $v \neq x$ or $u \neq w$ or nil $=$ u or (nil $\neq w$ and nil $= x$)))))) fof(co_1, conjecture)

SWC036-1.p cond_id_nil_x_id_nil
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC037+1.p cond_id_nil_x_id_segment_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (\mathrm{nil} \neq v$ or $v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $(\forall y$: $(\mathrm{ssList}(y) \Rightarrow (\neg\,\mathrm{neq}(y, \mathrm{nil})$ or $\neg\,\mathrm{segmentP}(x, y)$ or $\neg\,\mathrm{segmentP}(w, y)))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC037-1.p cond_id_nil_x_id_segment_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_5, \mathrm{nil})$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_3, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_5, \mathrm{nil})$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_3, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$

SWC038+1.p cond_id_nil_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (\mathrm{nil} \neq v$ or $v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $((\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w)$ and $(\neg\,\mathrm{neq}(w, \mathrm{nil})$ or $\neg\,\mathrm{frontsegP}(x, w)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC038-1.p cond_id_nil_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC039+1.p cond_id_nil_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (\mathrm{nil} \neq v$ or $v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $(\forall y$: $(\mathrm{ssItem}(y) \Rightarrow \forall z$: $(\mathrm{ssList}(z) \Rightarrow \forall x_1$: $(\mathrm{ssList}(x_1) \Rightarrow (\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\mathrm{app}(\mathrm{app}(z, w), x_1) \neq x$ or $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $\mathrm{memberP}(z, x_2)$ and $\mathrm{lt}(y, x_2))$ or $\exists x_3$: $(\mathrm{ssItem}(x_3)$ and $\mathrm{memberP}(x_1, x_3)$ and $\mathrm{lt}(x_3, y))))))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC039-1.p cond_id_nil_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_6, a)$ and $\mathrm{lt}(\mathrm{sk}_5, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{lt}(a, \mathrm{sk}_5)) \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_6, a)$ and $\mathrm{lt}(\mathrm{sk}_5, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{lt}(a, \mathrm{sk}_5)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{22}, \mathrm{negated\_conjecture})$

SWC040+1.p cond_id_nil_x_rot_r_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (\mathrm{nil} \neq v$ or $v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $(\forall y$: $(\mathrm{ssItem}(y) \Rightarrow \forall z$: $(\mathrm{ssList}(z) \Rightarrow (\mathrm{app}(\mathrm{cons}(y, \mathrm{nil}), z) \neq w$ or $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) \neq x)))$ and $\mathrm{neq}(x, \mathrm{nil})))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC040-1.p cond_id_nil_x_rot_r_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$

$\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC041+1.p cond_id_nil_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (\mathrm{nil} \neq v$ or $v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow (\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{equalelemsP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$ and $\mathrm{app}(x_2, \mathrm{cons}(z, \mathrm{nil})) = w)))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC041-1.p cond_id_nil_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_con}$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC042+1.p cond_id_nil_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (\mathrm{nil} \neq v$ or $v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow (\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{totalorderedP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $\exists x_3$: $(\mathrm{ssList}(x_3)$ and $\mathrm{app}(x_3, \mathrm{cons}(x_2, \mathrm{nil})) = w$ and $x_2 \leq z))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC042-1.p cond_id_nil_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow \neg\, c \leq a$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC043+1.p cond_id_nil_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (\mathrm{nil} \neq v$ or $v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow (\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) y$ and $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $\exists x_3$: $(\mathrm{ssList}(x_3)$ and $\mathrm{app}(x_3, \mathrm{cons}(x_2, \mathrm{nil})) = w$ and $\mathrm{lt}(x_2, z)))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC043-1.p cond_id_nil_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow \neg\, \mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC044+1.p cond_id_nil_x_segment_rear
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (\mathrm{nil} \neq v$ or $v \neq x$ or $u \neq w$ or $\neg\, \mathrm{rearsegP}(x, w)$ or $\mathrm{nil} = u)))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC044-1.p cond_id_nil_x_segment_rear
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC045+1.p cond_id_nil_x_set_duplicate_elems

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ (nil $\neq v$ or $v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and ((¬ memberP(w, y) and $\exists z$: (ssList(z) and segmentP(x, app(app(cons(y, nil), z), cons(y, nil))))) or ($\forall$ ¬ segmentP(x, app(app(cons(y, nil), z), cons(y, nil)))) and memberP(w, y)))))))) fof(co_1, conjecture)

SWC045-1.p cond_id_nil_x_set_duplicate_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
nil = sk_2 cnf($co1_5$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_6$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_7$, negated_conjecture)
nil $\neq sk_1$ cnf($co1_8$, negated_conjecture)
(ssItem(a) and ssList(b) and segmentP(sk_4, app(app(cons(a, nil), b), cons(a, nil)))) $\Rightarrow$ memberP(sk_3, a) cnf($co1_9$, negated
(ssItem(a) and memberP(sk_3, a)) $\Rightarrow$ ssList($sk_5(a)$) cnf($co1_{10}$, negated_conjecture)
(ssItem(a) and memberP(sk_3, a)) $\Rightarrow$ segmentP(sk_4, app(app(cons(a, nil), $sk_5(a)$), cons(a, nil))) cnf($co1_{11}$, negated_conject

SWC046+1.p cond_id_nil_x_set_unique_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ (nil $\neq v$ or $v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and ((¬ memberP(w, y) and $\forall z$: (ssList(z) $\Rightarrow$ ¬ segmentP(x, app(app(cons(y, nil), z), cons(y, nil)))) and

SWC046-1.p cond_id_nil_x_set_unique_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
nil = sk_2 cnf($co1_5$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_6$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_7$, negated_conjecture)
nil $\neq sk_1$ cnf($co1_8$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or ssList($sk_5(a)$)) cnf($co1_9$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or segmentP(sk_4, app(app(cons(a, nil), $sk_5(a)$), cons(a, nil)))) cnf(
(ssItem(a) and memberP(sk_3, a)) $\Rightarrow$ memberP(sk_4, a) cnf($co1_{11}$, negated_conjecture)
(ssItem(a) and memberP(sk_3, a) and ssList(b)) $\Rightarrow$ ¬ segmentP(sk_4, app(app(cons(a, nil), b), cons(a, nil))) cnf($co1_{12}$, negat

SWC047+1.p cond_id_rear_total1_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $x \neq w$ or ((nil $\neq$ v or nil = u) and (¬ neq(v, nil) or $\exists y$: (ssList(y) and neq(y, nil) and rearsegP(v, y) and rearsegP(u, y))))))))) fof(co_1, conj

SWC047-1.p cond_id_rear_total1_x_copy

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_4 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{rearsegP}(\mathrm{sk}_2, a)$ and $\mathrm{rearsegP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{rearsegP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{rearsegP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC048+1.p cond_id_rear_total1_x_ne_segment_rear_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ and $\mathrm{neq}(y, \mathrm{nil})$ and $\mathrm{rearsegP}(v, y)$ and $\mathrm{rearsegP}(u, y))))$ or $((\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w)$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{rearsegP}(x, w)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC048-1.p cond_id_rear_total1_x_ne_segment_rear_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{rearsegP}(\mathrm{sk}_2, a)$ and $\mathrm{rearsegP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{rearsegP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{rearsegP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC049+1.p cond_id_rear_total2_x_ne_segment_rear_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssList}(y)$ and $\mathrm{neq}(y, \mathrm{nil})$ an
w and $\mathrm{nil} = x)$ or $(\mathrm{nil} = v$ and $\mathrm{nil} = u)$ or $(\mathrm{neq}(x, \mathrm{nil})$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{rearsegP}(x, w)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC049-1.p cond_id_rear_total2_x_ne_segment_rear_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$

$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{rearsegP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{rearsegP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC050+1.p cond_id_rear_x_id_rear
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ a
$(\neg\, \mathrm{neq}(z, \mathrm{nil})$ or $\neg\, \mathrm{rearsegP}(x, z)$ or $\neg\, \mathrm{rearsegP}(w, z))))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC050-1.p cond_id_rear_x_id_rear
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{rearsegP}(\mathrm{sk}_2, a)$ and $\mathrm{rearsegP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_5, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{rearsegP}(\mathrm{sk}_3, \mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{rearsegP}(\mathrm{sk}_2, a)$ and $\mathrm{rearsegP}(\mathrm{sk}_1, a)) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_5, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{rearsegP}(\mathrm{sk}_3, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC051+1.p cond_id_rear_x_ne_segment_rear_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ an
w and $\mathrm{nil} = x)$ or $(\mathrm{neq}(x, \mathrm{nil})$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{rearsegP}(x, w))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC051-1.p cond_id_rear_x_ne_segment_rear_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$

(ssList(a) and neq(a, nil) and rearsegP(sk_2, a)) $\Rightarrow$ $\neg$ rearsegP(sk_1, a) cnf($\mathrm{co1}_8$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_9$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_3, nil) cnf($\mathrm{co1}_{10}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ rearsegP(sk_4, sk_3) cnf($\mathrm{co1}_{11}$, negated_conjecture)

SWC052+1.p cond_id_segment_total1_x_id_front_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or (nil $\neq w$ and nil = x) or ($\forall y$: ($\neg$ ssList(y) or $\neg$ neq(y, nil) or $\neg$ frontsegP(x, y) or $\neg$ frontsegP(w, y)) and neq(x, nil)) or ((nil $\neq v$ or nil = u) and ($\neg$ neq(v, nil) or $\exists z$: (ssList(z) and neq(z, nil) and segmentP(v, z) and segmentP(u, z)))))))) fof(co_1, conjecture)

SWC052-1.p cond_id_segment_total1_x_id_front_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_5) cnf($\mathrm{co1}_8$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_5, nil) cnf($\mathrm{co1}_9$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ frontsegP(sk_4, sk_5) cnf($\mathrm{co1}_{10}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ frontsegP(sk_3, sk_5) cnf($\mathrm{co1}_{11}$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($\mathrm{co1}_{12}$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a) and segmentP(sk_1, a)) $\Rightarrow$ nil = sk_2 cnf($\mathrm{co1}_{13}$, negated_conjecture)
nil = sk_1 $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_{14}$, negated_conjecture)
(nil = sk_1 and ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf($\mathrm{co1}_{15}$, negated_conjecture)

SWC053+1.p cond_id_segment_total1_x_id_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ($\forall y$: (ssList(y) $\Rightarrow$ ($\neg$ neq(y, nil) or $\neg$ frontsegP(x, y) or $\neg$ frontsegP(w, y))) and (nil $\neq x$ or nil $\neq w$)) or ((nil $\neq v$ or nil = u) and ($\neg$ neq(v, nil) o

SWC053-1.p cond_id_segment_total1_x_id_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
ssList(sk_5) or nil = sk_4 cnf($\mathrm{co1}_7$, negated_conjecture)
ssList(sk_5) or nil = sk_3 cnf($\mathrm{co1}_8$, negated_conjecture)
neq(sk_5, nil) or nil = sk_4 cnf($\mathrm{co1}_9$, negated_conjecture)
frontsegP(sk_4, sk_5) or nil = sk_4 cnf($\mathrm{co1}_{10}$, negated_conjecture)
frontsegP(sk_3, sk_5) or nil = sk_4 cnf($\mathrm{co1}_{11}$, negated_conjecture)
neq(sk_5, nil) or nil = sk_3 cnf($\mathrm{co1}_{12}$, negated_conjecture)
frontsegP(sk_4, sk_5) or nil = sk_3 cnf($\mathrm{co1}_{13}$, negated_conjecture)

frontsegP(sk_3, sk_5) or nil = sk_3 cnf($co1_{14}$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($co1_{15}$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a) and segmentP(sk_1, a)) ⇒ nil = sk_2 cnf($co1_{16}$, negated_conjecture)
nil = sk_1 ⇒ neq(sk_2, nil) cnf($co1_{17}$, negated_conjecture)
(nil = sk_1 and ssList(a) and neq(a, nil) and segmentP(sk_2, a)) ⇒ ¬ segmentP(sk_1, a) cnf($co1_{18}$, negated_conjecture)

SWC054+1.p cond_id_segment_total1_x_id_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
∀u: (ssList(u) ⇒ ∀v: (ssList(v) ⇒ ∀w: (ssList(w) ⇒ ∀x: (¬ ssList(x) or $v \neq x$ or $u \neq w$ or (nil ≠ w and nil = x) or (∀y: (¬ ssList(y) or ¬ neq(y, nil) or ¬ segmentP(x, y) or ¬ segmentP(w, y)) and neq(x, nil)) or ((nil ≠ v or nil = u) and (¬ neq(v, nil) or ∃z: (ssList(z) and neq(z, nil) and segmentP(v, z) and segmentP(u, z)))))))) fof(co_1, conjecture)

SWC054-1.p cond_id_segment_total1_x_id_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
sk_2 = sk_4 cnf($co1_5$, negated_conjecture)
sk_1 = sk_3 cnf($co1_6$, negated_conjecture)
nil = sk_4 ⇒ nil = sk_3 cnf($co1_7$, negated_conjecture)
neq(sk_4, nil) ⇒ ssList(sk_5) cnf($co1_8$, negated_conjecture)
neq(sk_4, nil) ⇒ neq(sk_5, nil) cnf($co1_9$, negated_conjecture)
neq(sk_4, nil) ⇒ segmentP(sk_4, sk_5) cnf($co1_{10}$, negated_conjecture)
neq(sk_4, nil) ⇒ segmentP(sk_3, sk_5) cnf($co1_{11}$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($co1_{12}$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a) and segmentP(sk_1, a)) ⇒ nil = sk_2 cnf($co1_{13}$, negated_conjecture)
nil = sk_1 ⇒ neq(sk_2, nil) cnf($co1_{14}$, negated_conjecture)
(nil = sk_1 and ssList(a) and neq(a, nil) and segmentP(sk_2, a)) ⇒ ¬ segmentP(sk_1, a) cnf($co1_{15}$, negated_conjecture)

SWC055+1.p cond_id_segment_total1_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
∀u: (ssList(u) ⇒ ∀v: (ssList(v) ⇒ ∀w: (ssList(w) ⇒ ∀x: (ssList(x) ⇒ ($v \neq x$ or $u \neq w$ or (∀y: (ssItem(y) ⇒ (cons(y, nil) ≠ w or ¬ memberP(x, y) or ∃z: (ssItem(z) and $y \neq z$ and memberP(x, z) and $y \leq z$))) and (nil ≠ x or nil ≠ w)) or ((nil ≠ v or nil = u) and (¬ neq(v, nil) or ∃x_1: (ssList(x_1) and neq(x_1, nil) and segmentP(v, x_1) and segmen

SWC055-1.p cond_id_segment_total1_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
sk_2 = sk_4 cnf($co1_5$, negated_conjecture)
sk_1 = sk_3 cnf($co1_6$, negated_conjecture)
ssItem(sk_5) or nil = sk_4 cnf($co1_7$, negated_conjecture)
ssItem(sk_5) or nil = sk_3 cnf($co1_8$, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_4 cnf($co1_9$, negated_conjecture)
memberP(sk_4, sk_5) or nil = sk_4 cnf($co1_{10}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $sk_5 \leq a$) ⇒ (sk_5 = a or nil = sk_4) cnf($co1_{11}$, negated_conjecture)

$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_5 \leq a) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_3)$ $\quad \mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)$ and $\mathrm{segmentP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\quad \mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\quad \mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC056+1.p cond_id_segment_total1_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $(\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, y)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $y \neq z$ and $\mathrm{memberP}(x, z)$ and $z \leq y)))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w))$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{neq}(x_1, \mathrm{nil})$ and $\mathrm{segmentP}(v, x_1)$ and segmen

SWC056-1.p cond_id_segment_total1_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\quad \mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\quad \mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\quad \mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\quad \mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_5) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_4)$ $\quad \mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_5) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_3)$ $\quad \mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)$ and $\mathrm{segmentP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\quad \mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\quad \mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\quad \mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC057+1.p cond_id_segment_total1_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ and $\mathrm{neq}(y, \mathrm{nil})$ and $\mathrm{segmentP}(v, y)$ and $\mathrm{segmentP}(u, y))))$ or $((\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w)$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{frontsegP}(x, w)))))))$ $\quad \mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC057-1.p cond_id_segment_total1_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\quad \mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\quad \mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\quad \mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\quad \mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$

$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)$ and $\mathrm{segmentP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\,\mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC058+1.p cond_id_segment_total1_x_ne_segment_rear_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\,\mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ and $\mathrm{neq}(y, \mathrm{nil})$ and $\mathrm{segmentP}(v, y)$ and $\mathrm{segmentP}(u, y))))$ or $((\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w)$ and $(\neg\,\mathrm{neq}(w, \mathrm{nil})$ or $\neg\,\mathrm{rearsegP}(x, w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC058-1.p cond_id_segment_total1_x_ne_segment_rear_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)$ and $\mathrm{segmentP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\,\mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC059+1.p cond_id_segment_total1_x_ne_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $(\mathrm{neq}(x, \mathrm{nil})$ and $(\neg\,\mathrm{neq}(w, \mathrm{nil})$ or $\neg\,\mathrm{segmentP}(x, w)))$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ and ne

SWC059-1.p cond_id_segment_total1_x_ne_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

(ssList(a) and neq(a, nil) and segmentP(sk_2, a) and segmentP(sk_1, a)) $\Rightarrow$ nil = sk_2 cnf($\mathrm{co1}_{11}$, negated_conjecture)
nil = sk_1 $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_{12}$, negated_conjecture)
(nil = sk_1 and ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf($\mathrm{co1}_{13}$, negated_conjecture)

SWC060+1.p cond_id_segment_total1_x_ne_segment_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or ((nil $\neq v$ or nil = u) and ($\neg$ neq(v, nil) or $\exists y$: (ssList(y) and neq(y, nil) and segmentP(v, y) and segmentP(u, y)))) or ((nil $\neq x$ or nil $\neq$ w) and ($\neg$ neq(w, nil) or $\neg$ segmentP(x, w))))))) fof(co_1, conjecture)

SWC060-1.p cond_id_segment_total1_x_ne_segment_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a) and segmentP(sk_1, a)) $\Rightarrow$ nil = sk_2 cnf($\mathrm{co1}_8$, negated_conjecture)
nil = sk_1 $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_9$, negated_conjecture)
(nil = sk_1 and ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf($\mathrm{co1}_{10}$, negated_conjecture)
nil = sk_4 or neq(sk_3, nil) cnf($\mathrm{co1}_{11}$, negated_conjecture)
nil = sk_4 or segmentP(sk_4, sk_3) cnf($\mathrm{co1}_{12}$, negated_conjecture)
nil = sk_3 or neq(sk_3, nil) cnf($\mathrm{co1}_{13}$, negated_conjecture)
nil = sk_3 or segmentP(sk_4, sk_3) cnf($\mathrm{co1}_{14}$, negated_conjecture)

SWC061+1.p cond_id_segment_total1_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or (nil $\neq w$ and nil = x) or ($\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: ($\neg$ ssList(z) or app(cons(y, nil), z) $\neq x$ or app(z, cons(y, nil)) $\neq w$)) and neq(x, nil)) or ((nil $\neq$ v or nil = u) and ($\neg$ neq(v, nil) or $\exists x_1$: (ssList(x_1) and neq(x_1, nil) and segmentP(v, x_1) and segmentP(u, x_1)))))))) fof(co

SWC061-1.p cond_id_segment_total1_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) cnf($\mathrm{co1}_8$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_6) cnf($\mathrm{co1}_9$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(cons(sk_5, nil), sk_6) = sk_4 cnf($\mathrm{co1}_{10}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(sk_6, cons(sk_5, nil)) = sk_3 cnf($\mathrm{co1}_{11}$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($\mathrm{co1}_{12}$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a) and segmentP(sk_1, a)) $\Rightarrow$ nil = sk_2 cnf($\mathrm{co1}_{13}$, negated_conjecture)
nil = sk_1 $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_{14}$, negated_conjecture)

$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC062+1.p cond_id_segment_total1_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: ($\mathrm{ssItem}(y)$ and $\exists z$: ($\mathrm{ssList}(z$
w and $\mathrm{app}(\mathrm{cons}(y, \mathrm{nil}), z) = x)$) or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists x_1$: ($\mathrm{ssList}(x_1)$ and ne

SWC062-1.p cond_id_segment_total1_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_4) \Rightarrow \mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)$ and $\mathrm{segmentP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC063+1.p cond_id_segment_total1_x_rot_r_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} =$
$x)$ or $(\forall y$: ($\mathrm{ssItem}(y) \Rightarrow \forall z$: ($\neg\, \mathrm{ssList}(z)$ or $\mathrm{app}(\mathrm{cons}(y, \mathrm{nil}), z) \neq w$ or $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) \neq x)$) and $\mathrm{neq}(x, \mathrm{nil}))$ or $((\mathrm{nil} \neq$
v or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists x_1$: ($\mathrm{ssList}(x_1)$ and $\mathrm{neq}(x_1, \mathrm{nil})$ and $\mathrm{segmentP}(v, x_1)$ and $\mathrm{segmentP}(u, x_1)))))))))$ fof(c

SWC063-1.p cond_id_segment_total1_x_rot_r_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)$ and $\mathrm{segmentP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC064+1.p cond_id_segment_total1_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.

include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z
w and app(z, cons(y, nil)) = x)) or (nil $\neq w$ and nil = x) or ((nil $\neq v$ or nil = u) and ($\neg$ neq(v, nil) or $\exists x_1$: (ssList(x_1) and ne

SWC064-1.p cond_id_segment_total1_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk_4) $\Rightarrow$ app(cons(a, nil), b) = sk_3 cnf($co1_7$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($co1_8$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($co1_9$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a) and segmentP(sk_1, a)) $\Rightarrow$ nil = sk_2 cnf($co1_{10}$, negated_conjecture)
nil = sk_1 $\Rightarrow$ neq(sk_2, nil) cnf($co1_{11}$, negated_conjecture)
(nil = sk_1 and ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf($co1_{12}$, negated_conjecture)

SWC065+1.p cond_id_segment_total1_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$
(app(w, y) $\neq x$ or $\neg$ equalelemsP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) = y and $\exists x_2$: (ssList(x_2)
w))))) or (nil $\neq x$ and nil = w) or ((nil $\neq v$ or nil = u) and ($\neg$ neq(v, nil) or $\exists x_3$: (ssList(x_3) and neq(x_3, nil) and segmentP(

SWC065-1.p cond_id_segment_total1_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
ssList(sk_5) cnf($co1_7$, negated_conjecture)
app(sk_3, sk_5) = sk_4 cnf($co1_8$, negated_conjecture)
equalelemsP(sk_3) cnf($co1_9$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_5 and ssList(c)) $\Rightarrow$ app(c, cons(a, nil)) $\neq sk_3$ cnf($co1_{10}$, negated_con
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($co1_{11}$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($co1_{12}$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a) and segmentP(sk_1, a)) $\Rightarrow$ nil = sk_2 cnf($co1_{13}$, negated_conjecture)
nil = sk_1 $\Rightarrow$ neq(sk_2, nil) cnf($co1_{14}$, negated_conjecture)
(nil = sk_1 and ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf($co1_{15}$, negated_conjecture)

SWC066+1.p cond_id_segment_total1_x_run_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\neg$ totalorde
v or nil = u) and ($\neg$ neq(v, nil) or $\exists z$: (ssList(z) and neq(z, nil) and segmentP(v, z) and segmentP(u, z)))))))) fof(co_1, co

SWC066-1.p cond_id_segment_total1_x_run_ord_max1

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{neq}(\mathrm{sk}_3, a) \text{ and } \mathrm{segmentP}(\mathrm{sk}_4, a) \text{ and } \mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{totalorderedP}(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjectu}$
$\mathrm{nil} = \mathrm{sk}_2 \text{ or } \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{neq}(a, \mathrm{nil}) \text{ and } \mathrm{segmentP}(\mathrm{sk}_2, a) \text{ and } \mathrm{segmentP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1 \text{ and } \mathrm{ssList}(a) \text{ and } \mathrm{neq}(a, \mathrm{nil}) \text{ and } \mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC067+1.p cond_id_segment_total1_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \forall y$: $(\mathrm{ssList}(y) \Rightarrow$
$\forall z$: $(\mathrm{ssList}(z) \Rightarrow (\mathrm{app}(\mathrm{app}(y, w), z) \neq x \text{ or } \neg\, \mathrm{strictorderedP}(w) \text{ or } \exists x_1$: $(\mathrm{ssItem}(x_1) \text{ and } \exists x_2$: $(\mathrm{ssList}(x_2) \text{ and } \mathrm{app}(x_2, \mathrm{cons}(x_1$
$y \text{ and } \exists x_3$: $(\mathrm{ssItem}(x_3) \text{ and } \exists x_4$: $(\mathrm{ssList}(x_4) \text{ and } \mathrm{app}(\mathrm{cons}(x_3, \mathrm{nil}), x_4) = w \text{ and } \mathrm{lt}(x_1, x_3)))))$ or $\exists x_5$: $(\mathrm{ssItem}(x_5) \text{ and } \exists x_6$: $(\mathrm{ss}$
$z \text{ and } \exists x_7$: $(\mathrm{ssItem}(x_7) \text{ and } \exists x_8$: $(\mathrm{ssList}(x_8) \text{ and } \mathrm{app}(x_8, \mathrm{cons}(x_7, \mathrm{nil})) = w \text{ and } \mathrm{lt}(x_7, x_5)))))))))$ or $(\mathrm{nil} \neq x \text{ and } \mathrm{nil} =$
$w)$ or $((\mathrm{nil} \neq v \text{ or } \mathrm{nil} = u) \text{ and } (\neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \exists x_9$: $(\mathrm{ssList}(x_9) \text{ and } \mathrm{neq}(x_9, \mathrm{nil}) \text{ and } \mathrm{segmentP}(v, x_9) \text{ and } \mathrm{segmentP}(u, x_9)))$

SWC067-1.p cond_id_segment_total1_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_3), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_5 \text{ and } \mathrm{ssItem}(c) \text{ and } \mathrm{ssList}(d) \text{ and } \mathrm{app}(\mathrm{cons}(c, \mathrm{nil}), d) = \mathrm{sk}_3) \Rightarrow$
$\neg\, \mathrm{lt}(a, c)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6 \text{ and } \mathrm{ssItem}(c) \text{ and } \mathrm{ssList}(d) \text{ and } \mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, \mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2 \text{ or } \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{neq}(a, \mathrm{nil}) \text{ and } \mathrm{segmentP}(\mathrm{sk}_2, a) \text{ and } \mathrm{segmentP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1 \text{ and } \mathrm{ssList}(a) \text{ and } \mathrm{neq}(a, \mathrm{nil}) \text{ and } \mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

SWC068+1.p cond_id_segment_total2_x_double
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (\mathrm{app}(x, x) \neq w \text{ or } v \neq x \text{ or } u \neq$
$w \text{ or } \exists y$: $(\mathrm{ssList}(y) \text{ and } \mathrm{neq}(y, \mathrm{nil}) \text{ and } \mathrm{segmentP}(v, y) \text{ and } \mathrm{segmentP}(u, y)) \text{ or } (\mathrm{nil} = v \text{ and } \mathrm{nil} = u))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjectu}$

SWC068-1.p cond_id_segment_total2_x_double
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_4, \mathrm{sk}_4) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC069+1.p cond_id_segment_total2_x_id_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssList}(y)$ and $\mathrm{neq}(y, \mathrm{nil})$ an
w and $\mathrm{nil} = x)$ or $(\mathrm{nil} = v$ and $\mathrm{nil} = u)$ or $(\forall z$: $(\mathrm{ssList}(z) \Rightarrow (\neg\, \mathrm{neq}(z, \mathrm{nil})$ or $\neg\, \mathrm{segmentP}(x, z)$ or $\neg\, \mathrm{segmentP}(w, z)))$ and ne

SWC069-1.p cond_id_segment_total2_x_id_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_5, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{segmentP}(\mathrm{sk}_3, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC070+1.p cond_id_segment_total2_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssList}(y)$ and $\mathrm{neq}(y, \mathrm{nil})$ an
v and $\mathrm{nil} = u)$ or $((\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w)$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{frontsegP}(x, w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC070-1.p cond_id_segment_total2_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$

(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf($\mathrm{co1}_7$, negated_conjecture)
nil $= \mathrm{sk}_2$ $\Rightarrow$ nil $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_8$, negated_conjecture)
nil $= \mathrm{sk}_4$ or neq(sk_3, nil) cnf($\mathrm{co1}_9$, negated_conjecture)
nil $= \mathrm{sk}_4$ or frontsegP(sk_4, sk_3) cnf($\mathrm{co1}_{10}$, negated_conjecture)
nil $= \mathrm{sk}_3$ or neq(sk_3, nil) cnf($\mathrm{co1}_{11}$, negated_conjecture)
nil $= \mathrm{sk}_3$ or frontsegP(sk_4, sk_3) cnf($\mathrm{co1}_{12}$, negated_conjecture)

SWC071+1.p cond_id_segment_total2_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssList(y) and neq(y, nil) an
v and nil $= u$) or ($\forall z$: (ssItem(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ (cons(z, nil) $\neq w$ or app(app(x_1, w), x_2) $\neq$
x or $\exists x_3$: (ssItem(x_3) and memberP(x_1, x_3) and lt(z, x_3)) or $\exists x_4$: (ssItem(x_4) and memberP(x_2, x_4) and lt(x_4, z)))))) and (n
x or nil $\neq w$))))))) fof(co_1, conjecture)

SWC071-1.p cond_id_segment_total2_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf($\mathrm{co1}_7$, negated_conjecture)
nil $= \mathrm{sk}_2$ $\Rightarrow$ nil $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_8$, negated_conjecture)
ssItem(sk_5) or nil $= \mathrm{sk}_4$ cnf($\mathrm{co1}_9$, negated_conjecture)
ssItem(sk_5) or nil $= \mathrm{sk}_3$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
ssList(sk_6) or nil $= \mathrm{sk}_4$ cnf($\mathrm{co1}_{11}$, negated_conjecture)
ssList(sk_7) or nil $= \mathrm{sk}_4$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
cons(sk_5, nil) $= \mathrm{sk}_3$ or nil $= \mathrm{sk}_4$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
app(app(sk_6, sk_3), sk_7) $= \mathrm{sk}_4$ or nil $= \mathrm{sk}_4$ cnf($\mathrm{co1}_{14}$, negated_conjecture)
(ssItem(a) and memberP(sk_6, a) and lt(sk_5, a)) $\Rightarrow$ nil $= \mathrm{sk}_4$ cnf($\mathrm{co1}_{15}$, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and lt(a, sk_5)) $\Rightarrow$ nil $= \mathrm{sk}_4$ cnf($\mathrm{co1}_{16}$, negated_conjecture)
ssList(sk_6) or nil $= \mathrm{sk}_3$ cnf($\mathrm{co1}_{17}$, negated_conjecture)
ssList(sk_7) or nil $= \mathrm{sk}_3$ cnf($\mathrm{co1}_{18}$, negated_conjecture)
cons(sk_5, nil) $= \mathrm{sk}_3$ or nil $= \mathrm{sk}_3$ cnf($\mathrm{co1}_{19}$, negated_conjecture)
app(app(sk_6, sk_3), sk_7) $= \mathrm{sk}_4$ or nil $= \mathrm{sk}_3$ cnf($\mathrm{co1}_{20}$, negated_conjecture)
(ssItem(a) and memberP(sk_6, a) and lt(sk_5, a)) $\Rightarrow$ nil $= \mathrm{sk}_3$ cnf($\mathrm{co1}_{21}$, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and lt(a, sk_5)) $\Rightarrow$ nil $= \mathrm{sk}_3$ cnf($\mathrm{co1}_{22}$, negated_conjecture)

SWC072+1.p cond_id_segment_total2_x_rot_l_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\exists y$: (ssList(y) and neq(y, nil) an
w and nil $= x$) or (nil $= v$ and nil $= u$) or ($\exists z$: (ssList(z) and $w \neq z$ and $\exists x_1$: (ssList(x_1) and $\exists x_2$: (ssList(x_2) and tl(x) =
x_1 and app(x_1, x_2) $= z$ and $\exists x_3$: (ssItem(x_3) and cons(x_3, nil) $= x_2$ and hd(x) $= x_3$ and neq(nil, x)) and neq(nil, x)))) and n

SWC072-1.p cond_id_segment_total2_x_rot_l_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{tl}(\mathrm{sk}_4) = b$ and $\mathrm{app}(b, c) = a$ and $\mathrm{ssItem}(d)$ and $\mathrm{cons}(d, \mathrm{nil}) = c$ and $\mathrm{hd}(\mathrm{sk}_4) = d$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow \mathrm{sk}_3 = a$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC073+1.p cond_id_segment_total2_x_rot_r_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssList}(y)$ and $\mathrm{neq}(y, \mathrm{nil})$ an
w and $\mathrm{nil} = x)$ or $(\mathrm{nil} = v$ and $\mathrm{nil} = u)$ or $(\mathrm{neq}(x, \mathrm{nil})$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\exists z$: $(\mathrm{ssList}(z)$ and $x \neq z$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and
x_1 and $\mathrm{app}(x_1, x_2) = z$ and $\exists x_3$: $(\mathrm{ssItem}(x_3)$ and $\mathrm{cons}(x_3, \mathrm{nil}) = x_2$ and $\mathrm{hd}(w) = x_3$ and $\mathrm{neq}(\mathrm{nil}, w))$ and $\mathrm{neq}(\mathrm{nil}, w))))))))))$

SWC073-1.p cond_id_segment_total2_x_rot_r_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ and $\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{tl}(\mathrm{sk}_3) = b$ and $\mathrm{app}(b, c) = a$ and $\mathrm{ssItem}(d)$ and $\mathrm{cons}(d, \mathrm{nil}) = c$ and $\mathrm{hd}(\mathrm{sk}_3) = d$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_3)$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_3)) \Rightarrow \mathrm{sk}_4 = a$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC074+1.p cond_id_segment_total2_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssList}(y)$ and $\mathrm{neq}(y, \mathrm{nil})$ an
w and $\mathrm{app}(x_1, \mathrm{cons}(z, \mathrm{nil})) = x))$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $(\mathrm{nil} = v$ and $\mathrm{nil} = u))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC074-1.p cond_id_segment_total2_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_4) \Rightarrow \mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC075+1.p cond_id_segment_total2_x_rotate

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\exists y$: (ssList(y) and neq(y, nil) an
$\forall x_1$: ($\neg$ ssList(x_1) or app(z, x_1) $\neq x$ or app(x_1, z) $\neq w$)) or (nil $= v$ and nil $= u$))))) fof(co_1, conjecture)

SWC075-1.p cond_id_segment_total2_x_rotate
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf($co1_7$, negated_conjecture)
ssList(sk_5) cnf($co1_8$, negated_conjecture)
ssList(sk_6) cnf($co1_9$, negated_conjecture)
app(sk_5, sk_6) $= sk_4$ cnf($co1_{10}$, negated_conjecture)
app(sk_6, sk_5) $= sk_3$ cnf($co1_{11}$, negated_conjecture)
nil $= sk_2$ $\Rightarrow$ nil $\neq sk_1$ cnf($co1_{12}$, negated_conjecture)

SWC076+1.p cond_id_segment_total2_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssList(y) and neq(y, nil) an
$\forall x_1$: (ssList(x_1) $\Rightarrow$ (app(app(z, w), x_1) $\neq x$ or $\neg$ equalelemsP(w) or $\exists x_2$: (ssItem(x_2) and $\exists x_3$: (ssList(x_3) and app(x_3, cons(
z and $\exists x_4$: (ssList(x_4) and app(cons(x_2, nil), x_4) $= w$))) or $\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ssList(x_6) and app(cons(x_5, nil), x_6) =
x_1 and $\exists x_7$: (ssList(x_7) and app(x_7, cons(x_5, nil)) $= w$)))))) or (nil $\neq x$ and nil $= w$) or (nil $= v$ and nil $= u$)))))) fof(co_1

SWC076-1.p cond_id_segment_total2_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf($co1_7$, negated_conjecture)
ssList(sk_5) cnf($co1_8$, negated_conjecture)
ssList(sk_6) cnf($co1_9$, negated_conjecture)
app(app(sk_5, sk_3), sk_6) $= sk_4$ cnf($co1_{10}$, negated_conjecture)
equalelemsP(sk_3) cnf($co1_{11}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) $= sk_5$ and ssList(c)) $\Rightarrow$ app(cons(a, nil), c) $\neq sk_3$ cnf($co1_{12}$, negated_con
(ssItem(a) and ssList(b) and app(cons(a, nil), b) $= sk_6$ and ssList(c)) $\Rightarrow$ app(c, cons(a, nil)) $\neq sk_3$ cnf($co1_{13}$, negated_con
nil $= sk_3$ $\Rightarrow$ nil $= sk_4$ cnf($co1_{14}$, negated_conjecture)
nil $= sk_2$ $\Rightarrow$ nil $\neq sk_1$ cnf($co1_{15}$, negated_conjecture)

SWC077+1.p cond_id_segment_total2_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ frontsegP(x, w) or $\neg$ strictorde
v and nil $= u$)))))) fof(co_1, conjecture)

SWC077-1.p cond_id_segment_total2_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
frontsegP(sk_4, sk_3) cnf(co1_7, negated_conjecture)
strictorderedP(sk_3) cnf(co1_8, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf(co1_9, negated_conjecture)
(ssList(a) and neq(sk_3, a) and frontsegP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ strictorderedP(a) cnf(co1_{10}, negated_conject
nil $= \text{sk}_2$ $\Rightarrow$ nil $\neq \text{sk}_1$ cnf(co1_{11}, negated_conjecture)

SWC078+1.p cond_id_segment_total2_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssList(y) and neq(y, nil) an
v and nil $= u$) or ($\forall z$: (ssItem(z) $\Rightarrow$ (cons(z, nil) $\neq w$ or $\neg$ memberP(x, z))) and (nil $\neq x$ or nil $\neq w$))))))) fof(co_1, conjec

SWC078-1.p cond_id_segment_total2_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf(co1_7, negated_conjecture)
nil $= \text{sk}_2$ $\Rightarrow$ nil $\neq \text{sk}_1$ cnf(co1_8, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_4$ cnf(co1_9, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_3$ cnf(co1_{10}, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_4$ cnf(co1_{11}, negated_conjecture)
memberP(sk_4, sk_5) or nil $= \text{sk}_4$ cnf(co1_{12}, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_3$ cnf(co1_{13}, negated_conjecture)
memberP(sk_4, sk_5) or nil $= \text{sk}_3$ cnf(co1_{14}, negated_conjecture)

SWC079+1.p cond_id_segment_x_head1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\exists y$: (ssList(y) a
z and $\exists x_1$: (ssItem(x_1) and cons(x_1, nil) $= z$ and hd(x) $= x_1$ and neq(nil, x)))) and ($\neg$ neq(v, nil) or neq(x, nil))))))))) fof(

SWC079-1.p cond_id_segment_x_head1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)$ and $\mathrm{segmentP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{cons}(b, \mathrm{nil}) = a$ and $\mathrm{hd}(\mathrm{sk}_4) = b$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)) \Rightarrow (\mathrm{sk}_3 = a$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil}))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{n}$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)$ and $\mathrm{segmentP}(\mathrm{sk}_1, a)) \Rightarrow \neg\,\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{cons}(b, \mathrm{nil}) = a$ and $\mathrm{hd}(\mathrm{sk}_4) = b$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow \mathrm{sk}_3 = a$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{n}$

SWC080+1.p cond_id_segment_x_id_front
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\,\mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $((\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ a

SWC080-1.p cond_id_segment_x_id_front
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)$ and $\mathrm{segmentP}(\mathrm{sk}_1, a)) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_5, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_3, \mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)$ and $\mathrm{segmentP}(\mathrm{sk}_1, a)) \Rightarrow \neg\,\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_5, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{frontsegP}(\mathrm{sk}_3, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC081+1.p cond_id_segment_x_id_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ an
$(\neg\,\mathrm{neq}(z, \mathrm{nil})$ or $\neg\,\mathrm{frontsegP}(x, z)$ or $\neg\,\mathrm{frontsegP}(w, z)))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC081-1.p cond_id_segment_x_id_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$

$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf($\mathrm{co1}_8$, negated_conjecture)
ssList(sk_5) or nil = sk_4 cnf($\mathrm{co1}_9$, negated_conjecture)
ssList(sk_5) or nil = sk_3 cnf($\mathrm{co1}_{10}$, negated_conjecture)
neq(sk_5, nil) or nil = sk_4 cnf($\mathrm{co1}_{11}$, negated_conjecture)
frontsegP(sk_4, sk_5) or nil = sk_4 cnf($\mathrm{co1}_{12}$, negated_conjecture)
frontsegP(sk_3, sk_5) or nil = sk_4 cnf($\mathrm{co1}_{13}$, negated_conjecture)
neq(sk_5, nil) or nil = sk_3 cnf($\mathrm{co1}_{14}$, negated_conjecture)
frontsegP(sk_4, sk_5) or nil = sk_3 cnf($\mathrm{co1}_{15}$, negated_conjecture)
frontsegP(sk_3, sk_5) or nil = sk_3 cnf($\mathrm{co1}_{16}$, negated_conjecture)

SWC082+1.p cond_id_segment_x_id_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssList(y) an
w and nil = x) or ($\forall z$: (ssList(z) $\Rightarrow$ ($\neg$ neq(z, nil) or $\neg$ segmentP(x, z) or $\neg$ segmentP(w, z))) and neq(x, nil))))))) fof(co_1

SWC082-1.p cond_id_segment_x_id_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf($\mathrm{co1}_8$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_9$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_5) cnf($\mathrm{co1}_{10}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_5, nil) cnf($\mathrm{co1}_{11}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ segmentP(sk_4, sk_5) cnf($\mathrm{co1}_{12}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ segmentP(sk_3, sk_5) cnf($\mathrm{co1}_{13}$, negated_conjecture)

SWC083+1.p cond_id_segment_x_insert
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssList(y) an
$\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: ($\neg$ ssList(x_2) or app(app(z, x_1), x_2) $\neq w$ or app(z, x_2) $\neq x$))))))) fof(co_1, conjecture)

SWC083-1.p cond_id_segment_x_insert
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf($\mathrm{co1}_8$, negated_conjecture)
ssList(sk_5) cnf($\mathrm{co1}_9$, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_6), \mathrm{sk}_7) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_7) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC084+1.p cond_id_segment_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssList(y) an
(cons(z, nil) $\neq w$ or $\neg$ memberP(x, z) or $\exists x_1$: (ssItem(x_1) and $z \neq x_1$ and memberP(x, x_1) and $z \leq x_1$))) and (nil $\neq$
x or nil $\neq w$)))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC084-1.p cond_id_segment_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
(ssItem(a) and memberP(sk_4, a) and $\mathrm{sk}_5 \leq a$) $\Rightarrow$ ($\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_4$) $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
(ssItem(a) and memberP(sk_4, a) and $\mathrm{sk}_5 \leq a$) $\Rightarrow$ ($\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_3$) $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$

SWC085+1.p cond_id_segment_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssList(y) an
x or nil $\neq w$) and ($\neg$ neq(w, nil) or $\neg$ frontsegP(x, w)))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC085-1.p cond_id_segment_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC086+1.p cond_id_segment_x_ne_segment_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssList(y) an
x or nil $\neq w$) and ($\neg$ neq(w, nil) or $\neg$ segmentP(x, w)))))))) fof(co_1, conjecture)

SWC086-1.p cond_id_segment_x_ne_segment_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
neq(sk_2, nil) cnf(co1_7, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf(co1_8, negated_conjecture)
nil $= \text{sk}_4$ or neq(sk_3, nil) cnf(co1_9, negated_conjecture)
nil $= \text{sk}_4$ or segmentP(sk_4, sk_3) cnf(co1_{10}, negated_conjecture)
nil $= \text{sk}_3$ or neq(sk_3, nil) cnf(co1_{11}, negated_conjecture)
nil $= \text{sk}_3$ or segmentP(sk_4, sk_3) cnf(co1_{12}, negated_conjecture)

SWC087+1.p cond_id_segment_x_rot_l1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\exists y$: (ssList(y) a
z and $\exists x_1$: (ssList(x_1) and $\exists x_2$: (ssList(x_2) and tl(x) $= x_1$ and app(x_1, x_2) $= z$ and $\exists x_3$: (ssItem(x_3) and cons(x_3, nil) =
x_2 and hd(x) $= x_3$ and neq(nil, x)) and neq(nil, x))))) and ($\neg$ neq(v, nil) or neq(x, nil)))))))) fof(co_1, conjecture)

SWC087-1.p cond_id_segment_x_rot_l1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf(co1_7, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf(co1_8, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a) and segmentP(sk_1, a)) $\Rightarrow$ neq(sk_2, nil) cnf(co1_9, negated_conjecture)
(ssList(a) and ssList(b) and ssList(c) and tl(sk_4) $= b$ and app(b, c) $= a$ and ssItem(d) and cons(d, nil) $= c$ and hd(sk_4) =
d and neq(nil, sk_4) and neq(nil, sk_4)) $\Rightarrow$ ($\text{sk}_3 = a$ or neq(sk_2, nil)) cnf(co1_{10}, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a) and segmentP(sk_1, a)) $\Rightarrow$ $\neg$ neq(sk_4, nil) cnf(co1_{11}, negated_conjecture)
(ssList(a) and ssList(b) and ssList(c) and tl(sk_4) $= b$ and app(b, c) $= a$ and ssItem(d) and cons(d, nil) $= c$ and hd(sk_4) =
d and neq(nil, sk_4) and neq(nil, sk_4) and neq(sk_4, nil)) $\Rightarrow$ $\text{sk}_3 = a$ cnf(co1_{12}, negated_conjecture)

SWC088+1.p cond_id_segment_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssList(y) an
w and app(cons(z, nil), x_1) = x)) or (nil $\neq w$ and nil = x)))))) fof(co_1, conjecture)

SWC088-1.p cond_id_segment_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
neq(sk_2, nil) cnf(co1_7, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf(co1_8, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_4) $\Rightarrow$ app(b, cons(a, nil)) = sk_3 cnf(co1_9, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf(co1_{10}, negated_conjecture)

SWC089+1.p cond_id_segment_x_rot_r_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssList(y) an
w and nil = x) or (neq(x, nil) and ($\neg$ neq(w, nil) or $\exists z$: (ssList(z) and $x \neq z$ and $\exists x_1$: (ssList(x_1) and $\exists x_2$: (ssList(x_2) and tl(
x_1 and app(x_1, x_2) = z and $\exists x_3$: (ssItem(x_3) and cons(x_3, nil) = x_2 and hd(w) = x_3 and neq(nil, w)) and neq(nil, w)))))))))

SWC089-1.p cond_id_segment_x_rot_r_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
neq(sk_2, nil) cnf(co1_7, negated_conjecture)
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) cnf(co1_8, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf(co1_9, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_3, nil) cnf(co1_{10}, negated_conjecture)
(neq(sk_4, nil) and ssList(a) and ssList(b) and ssList(c) and tl(sk_3) = b and app(b, c) = a and ssItem(d) and cons(d, nil) =
c and hd(sk_3) = d and neq(nil, sk_3) and neq(nil, sk_3)) $\Rightarrow$ $\text{sk}_4 = a$ cnf(co1_{11}, negated_conjecture)

SWC090+1.p cond_id_segment_x_rotate
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssList(y) an
$\forall x_1$: (ssList(x_1) $\Rightarrow$ (app(z, x_1) $\neq x$ or app(x_1, z) $\neq w$)))))))) fof(co_1, conjecture)

SWC090-1.p cond_id_segment_x_rotate
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_5) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC091+1.p cond_id_segment_x_run_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\neg\, \mathrm{frontsegP}(x, w$

SWC091-1.p cond_id_segment_x_run_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{frontsegP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{totalorderedP}(a)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjectu$

SWC092+1.p cond_id_segment_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ an
$(\mathrm{app}(w, z) \neq x$ or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists x_1$: $(\mathrm{ssItem}(x_1)$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$ and $\mathrm{app}(\mathrm{cons}(x_1, \mathrm{nil}), x_2) = z$ and $\exists x_3$: $(\mathrm{ssIte$
w and $\mathrm{lt}(x_3, x_1)))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC092-1.p cond_id_segment_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(a, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, a)) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_1, a)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, \mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC093+1.p cond_id_segment_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssList(y) an
w and nil $= x$) or ($\forall z$: (ssItem(z) $\Rightarrow$ (cons(z, nil) $\neq w$ or $\neg$ memberP(x, z))) and neq(x, nil))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC093-1.p cond_id_segment_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
ssList(sk_2) $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
ssList(sk_3) $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
ssList(sk_4) $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
neq(sk_2, nil) $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
(ssList(a) and neq(a, nil) and segmentP(sk_2, a)) $\Rightarrow$ $\neg$ segmentP(sk_1, a) $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
neq(sk_4, nil) $\Rightarrow$ cons(sk_5, nil) $= \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
neq(sk_4, nil) $\Rightarrow$ memberP(sk_4, sk_5) $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC094+1.p cond_insert_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $x \neq$
w or $\exists y$: (ssList(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(y, z), x_1) $= u$ and app(y, x_1) $= v$)))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{c}$

SWC094-1.p cond_insert_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
ssList(sk_2) $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
ssList(sk_3) $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
ssList(sk_4) $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_4 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
(ssList(a) and ssList(b) and ssList(c) and app(app(a, b), c) $= \mathrm{sk}_1$) $\Rightarrow$ app(a, c) $\neq \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC095+1.p cond_insert_x_insert
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\exists y$: (ssList(y) and $\exists z$: (ssList(z)
u and app(y, x_1) $= v$))) or $\forall x_2$: (ssList(x_2) $\Rightarrow$ $\forall x_3$: (ssList(x_3) $\Rightarrow$ $\forall x_4$: ($\neg$ ssList(x_4) or app(app(x_2, x_3), x_4) $\neq$
w or app(x_2, x_4) $\neq x$))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC095-1.p cond_insert_x_insert
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.

include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(a, b), c) = \mathrm{sk}_1) \Rightarrow \mathrm{app}(a, c) \neq \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_6), \mathrm{sk}_7) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_7) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC096+1.p cond_last_x_last
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssItem}(y)$ u and $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) = v))$ or $\forall x_1$: $(\mathrm{ssItem}(x_1) \Rightarrow \forall x_2$: $(\neg\, \mathrm{ssList}(x_2)$ or $\mathrm{cons}(x_1, \mathrm{nil}) \neq w$ or $\mathrm{app}(x_2, \mathrm{cons}(x_1, \mathrm{nil})) \neq x)))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC096-1.p cond_last_x_last
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{cons}(a, \mathrm{nil}) = \mathrm{sk}_1$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_2) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjectu}$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{cons}(a, \mathrm{nil}) = \mathrm{sk}_1$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_2) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjec}$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC097+1.p cond_lead_x_lead
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssItem}(y)$ $v)$ or $\forall z$: $(\mathrm{ssItem}(z) \Rightarrow \mathrm{app}(w, \mathrm{cons}(z, \mathrm{nil})) \neq x))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC097-1.p cond_lead_x_lead
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$

$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{app}(\mathrm{sk}_1, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_2) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{app}(\mathrm{sk}_1, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_2) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_3, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC098+1.p cond_maximal_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\mathrm{cons}(y, \mathrm{nil}) =$
u and $\forall z$: $(\mathrm{ssItem}(z) \Rightarrow (\neg\, \mathrm{memberP}(v, z)$ or $\neg\, y \leq z$ or $y = z))$ and $\mathrm{memberP}(v, y))$ or $(\mathrm{nil} = v$ and $\mathrm{nil} =$
$u)$ or $(\forall x_1$: $(\mathrm{ssItem}(x_1) \Rightarrow (\mathrm{cons}(x_1, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, x_1)$ or $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $x_1 \neq x_2$ and $\mathrm{memberP}(x, x_2)$ an
$x_2)))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC098-1.p cond_maximal_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{cons}(a, \mathrm{nil}) = \mathrm{sk}_1$ and $\mathrm{memberP}(\mathrm{sk}_2, a)) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(a))$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{cons}(a, \mathrm{nil}) = \mathrm{sk}_1$ and $\mathrm{memberP}(\mathrm{sk}_2, a)) \Rightarrow \mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_5(a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{cons}(a, \mathrm{nil}) = \mathrm{sk}_1$ and $\mathrm{memberP}(\mathrm{sk}_2, a)) \Rightarrow a \leq \mathrm{sk}_5(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{cons}(a, \mathrm{nil}) = \mathrm{sk}_1$ and $a = \mathrm{sk}_5(a)) \Rightarrow \neg\, \mathrm{memberP}(\mathrm{sk}_2, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_6, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_6 \leq a) \Rightarrow (\mathrm{sk}_6 = a$ or $\mathrm{nil} = \mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_6, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_6 \leq a) \Rightarrow (\mathrm{sk}_6 = a$ or $\mathrm{nil} = \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$

SWC099+1.p cond_ne_segment_front_total1_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{frontsegP}(x, w)$ or $\neg$ equalelem
v or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $(\mathrm{neq}(u, \mathrm{nil})$ and $\mathrm{frontsegP}(v, u)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC099-1.p cond_ne_segment_front_total1_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.

include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{frontsegP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{equalelemsP}(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture}$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ and $\mathrm{frontsegP}(\mathrm{sk}_2, \mathrm{sk}_1)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})) \Rightarrow \neg\, \mathrm{frontsegP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC100+1.p cond_ne_segment_front_total1_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$
$(\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssItem}($
w and $\mathrm{lt}(x_2, z)))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w)$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $(\mathrm{neq}(u, \mathrm{nil})$ and $\mathrm{frontsegP}(v, u)))))$

SWC100-1.p cond_ne_segment_front_total1_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, \mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ and $\mathrm{frontsegP}(\mathrm{sk}_2, \mathrm{sk}_1)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})) \Rightarrow \neg\, \mathrm{frontsegP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC101+1.p cond_ne_segment_front_total2_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$
$(\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{equalelemsP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$
$w)))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w)$ or $(\mathrm{nil} = v$ and $\mathrm{nil} = u)$ or $(\mathrm{neq}(u, \mathrm{nil})$ and $\mathrm{frontsegP}(v, u)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC101-1.p cond_ne_segment_front_total2_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$

$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_con}$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil}) \Rightarrow \neg\, \mathrm{frontsegP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC102+1.p cond_ne_segment_front_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $x \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $(\mathrm{neq}(u, \mathrm{nil})$ and $\mathrm{frontsegP}(v, u)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC102-1.p cond_ne_segment_front_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_4 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil}) \Rightarrow \neg\, \mathrm{frontsegP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC103+1.p cond_ne_segment_front_x_ne_segment_front_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $(\mathrm{neq}(u, \mathrm{nil})$ and $\mathrm{frontsegP}(v, u))$ or $(\mathrm{neq}(x, \mathrm{nil})$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{frontsegP}(x, w)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{co}$

SWC103-1.p cond_ne_segment_front_x_ne_segment_front_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil}) \Rightarrow \neg\, \mathrm{frontsegP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC104+1.p cond_ne_segment_front_x_run_ord_front2

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\forall y$: (ssList(y) $\Rightarrow$ (app(w, y) $\neq x$ or $\neg$ totalorderedP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) = y and $\exists x_2$: (ssItem(x w and $x_2 \leq z$))))))) or (nil $\neq x$ and nil = w) or (neq(u, nil) and frontsegP(v, u))))))) fof(co_1, conjecture)

SWC104-1.p cond_ne_segment_front_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
neq(sk_2, nil) cnf(co1_7, negated_conjecture)
ssList(sk_5) cnf(co1_8, negated_conjecture)
app(sk_3, sk_5) = sk_4 cnf(co1_9, negated_conjecture)
totalorderedP(sk_3) cnf(co1_{10}, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_5 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$ $\neg\, c \leq a$ cnf(co1_{11}, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf(co1_{12}, negated_conjecture)
neq(sk_1, nil) $\Rightarrow$ $\neg$ frontsegP(sk_2, sk_1) cnf(co1_{13}, negated_conjecture)

SWC105+1.p cond_ne_segment_rear_total1_x_ne_segment_rear_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ((nil $\neq v$ or nil = u) and ($\neg$ neq(v, nil) or (neq(u, nil) and rearsegP(v, u)))) or ((nil $\neq x$ or nil $\neq w$) and ($\neg$ neq(w, nil) or $\neg$ rearsegP(x, w)))))))

SWC105-1.p cond_ne_segment_rear_total1_x_ne_segment_rear_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf(co1_7, negated_conjecture)
(neq(sk_1, nil) and rearsegP(sk_2, sk_1)) $\Rightarrow$ nil = sk_2 cnf(co1_8, negated_conjecture)
nil = sk_1 $\Rightarrow$ neq(sk_2, nil) cnf(co1_9, negated_conjecture)
(nil = sk_1 and neq(sk_1, nil)) $\Rightarrow$ $\neg$ rearsegP(sk_2, sk_1) cnf(co1_{10}, negated_conjecture)
nil = sk_4 or neq(sk_3, nil) cnf(co1_{11}, negated_conjecture)
nil = sk_4 or rearsegP(sk_4, sk_3) cnf(co1_{12}, negated_conjecture)
nil = sk_3 or neq(sk_3, nil) cnf(co1_{13}, negated_conjecture)
nil = sk_3 or rearsegP(sk_4, sk_3) cnf(co1_{14}, negated_conjecture)

SWC106+1.p cond_ne_segment_rear_x_last
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\forall y$: (ssItem(y)
$\forall z$: (ssList(z) $\Rightarrow$ (cons(y, nil) $\neq w$ or app(z, cons(y, nil)) $\neq x$))) or (neq(u, nil) and rearsegP(v, u))) and ($\neg$ neq(v, nil) or neq

SWC106-1.p cond_ne_segment_rear_x_last
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf($co1_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf($co1_8$, negated_conjecture)
ssItem(sk_5) or neq(sk_2, nil) cnf($co1_9$, negated_conjecture)
ssList(sk_6) or neq(sk_2, nil) cnf($co1_{10}$, negated_conjecture)
cons(sk_5, nil) = sk_3 or neq(sk_2, nil) cnf($co1_{11}$, negated_conjecture)
app(sk_6, cons(sk_5, nil)) = sk_4 or neq(sk_2, nil) cnf($co1_{12}$, negated_conjecture)
(neq(sk_1, nil) and rearsegP(sk_2, sk_1)) $\Rightarrow$ neq(sk_2, nil) cnf($co1_{13}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) cnf($co1_{14}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_6) cnf($co1_{15}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ cons(sk_5, nil) = sk_3 cnf($co1_{16}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(sk_6, cons(sk_5, nil)) = sk_4 cnf($co1_{17}$, negated_conjecture)
(neq(sk_1, nil) and rearsegP(sk_2, sk_1)) $\Rightarrow$ $\neg$ neq(sk_4, nil) cnf($co1_{18}$, negated_conjecture)

SWC107+1.p cond_ne_segment_total1_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ($\forall y$: (ssItem(y) $\Rightarrow$ (cons(y, nil) $\neq w$ or $\neg$ memberP(x, y) or $\exists z$: (ssItem(z) and $y \neq z$ and memberP(x, z) and $y \leq z$))) and (nil $\neq$ x or nil $\neq w$)) or ((nil $\neq v$ or nil = u) and ($\neg$ neq(v, nil) or (neq(u, nil) and segmentP(v, u)))))))))) fof(co_1, conjecture)

SWC107-1.p cond_ne_segment_total1_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
ssItem(sk_5) or nil = sk_4 cnf($co1_7$, negated_conjecture)
ssItem(sk_5) or nil = sk_3 cnf($co1_8$, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_4 cnf($co1_9$, negated_conjecture)
memberP(sk_4, sk_5) or nil = sk_4 cnf($co1_{10}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $sk_5 \leq a$) $\Rightarrow$ ($sk_5 = a$ or nil = sk_4) cnf($co1_{11}$, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_3 cnf($co1_{12}$, negated_conjecture)
memberP(sk_4, sk_5) or nil = sk_3 cnf($co1_{13}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $sk_5 \leq a$) $\Rightarrow$ ($sk_5 = a$ or nil = sk_3) cnf($co1_{14}$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($co1_{15}$, negated_conjecture)
(neq(sk_1, nil) and segmentP(sk_2, sk_1)) $\Rightarrow$ nil = sk_2 cnf($co1_{16}$, negated_conjecture)
nil = sk_1 $\Rightarrow$ neq(sk_2, nil) cnf($co1_{17}$, negated_conjecture)
(nil = sk_1 and neq(sk_1, nil)) $\Rightarrow$ $\neg$ segmentP(sk_2, sk_1) cnf($co1_{18}$, negated_conjecture)

SWC108+1.p cond_ne_segment_total1_x_ne_segment_rear_total2

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ((nil $\neq v$ or nil = u) and ($\neg$ neq(v, nil) or (neq(u, nil) and segmentP(v, u)))) or ((nil $\neq x$ or nil $\neq w$) and ($\neg$ neq(w, nil) or $\neg$ rearsegP(x, w))))))

SWC108-1.p cond_ne_segment_total1_x_ne_segment_rear_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($co1_7$, negated_conjecture)
(neq(sk_1, nil) and segmentP(sk_2, sk_1)) $\Rightarrow$ nil = sk_2 cnf($co1_8$, negated_conjecture)
nil = sk_1 $\Rightarrow$ neq(sk_2, nil) cnf($co1_9$, negated_conjecture)
(nil = sk_1 and neq(sk_1, nil)) $\Rightarrow$ $\neg$ segmentP(sk_2, sk_1) cnf($co1_{10}$, negated_conjecture)
nil = sk_4 or neq(sk_3, nil) cnf($co1_{11}$, negated_conjecture)
nil = sk_4 or rearsegP(sk_4, sk_3) cnf($co1_{12}$, negated_conjecture)
nil = sk_3 or neq(sk_3, nil) cnf($co1_{13}$, negated_conjecture)
nil = sk_3 or rearsegP(sk_4, sk_3) cnf($co1_{14}$, negated_conjecture)

SWC109+1.p cond_ne_segment_total1_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or ($\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: (ssList(z) $\Rightarrow$ $\forall x_1$: ($\neg$ ssList(x_1) or cons(y, nil) $\neq w$ or app(app(z, w), x_1) $\neq x$ or $\exists x_2$: (ssItem(x_2) and memberP(z, x_2) ar
x or nil $\neq w$)) or ((nil $\neq v$ or nil = u) and ($\neg$ neq(v, nil) or (neq(u, nil) and segmentP(v, u)))))))) fof(co_1, conjecture)

SWC109-1.p cond_ne_segment_total1_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
ssItem(sk_5) or nil = sk_4 cnf($co1_7$, negated_conjecture)
ssItem(sk_5) or nil = sk_3 cnf($co1_8$, negated_conjecture)
ssList(sk_6) or nil = sk_4 cnf($co1_9$, negated_conjecture)
ssList(sk_7) or nil = sk_4 cnf($co1_{10}$, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_4 cnf($co1_{11}$, negated_conjecture)
app(app(sk_6, sk_3), sk_7) = sk_4 or nil = sk_4 cnf($co1_{12}$, negated_conjecture)
(ssItem(a) and memberP(sk_6, a) and lt(sk_5, a)) $\Rightarrow$ nil = sk_4 cnf($co1_{13}$, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and lt(a, sk_5)) $\Rightarrow$ nil = sk_4 cnf($co1_{14}$, negated_conjecture)
ssList(sk_6) or nil = sk_3 cnf($co1_{15}$, negated_conjecture)
ssList(sk_7) or nil = sk_3 cnf($co1_{16}$, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_3 cnf($co1_{17}$, negated_conjecture)
app(app(sk_6, sk_3), sk_7) = sk_4 or nil = sk_3 cnf($co1_{18}$, negated_conjecture)
(ssItem(a) and memberP(sk_6, a) and lt(sk_5, a)) $\Rightarrow$ nil = sk_3 cnf($co1_{19}$, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and lt(a, sk_5)) $\Rightarrow$ nil = sk_3 cnf($co1_{20}$, negated_conjecture)

$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$
$(\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{22}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{23}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{24}, \mathrm{negated\_conjecture})$

SWC110+1.p cond_ne_segment_total1_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$ $(\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{equalelemsP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$ $w)))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w)$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $(\mathrm{neq}(u, \mathrm{nil})$ and $\mathrm{segmentP}(v, u)))))))))$ fof(co

SWC110-1.p cond_ne_segment_total1_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_con}$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC111+1.p cond_ne_segment_total1_x_run_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{segmentP}(x, w)$ or $\neg\, \mathrm{totalorde}$
v or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $(\mathrm{neq}(u, \mathrm{nil})$ and $\mathrm{segmentP}(v, u)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC111-1.p cond_ne_segment_total1_x_run_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{segmentP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{totalorderedP}(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjectu}$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC112+1.p cond_ne_segment_total1_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ $\forall z$: (ssList(z) $\Rightarrow$ (app(app(y, w), z) $\neq x$ or $\neg$ strictorderedP(w) or $\exists x_1$: (ssItem(x_1) and $\exists x_2$: (ssList(x_2) and app(x_2, cons(x_1 y and $\exists x_3$: (ssItem(x_3) and $\exists x_4$: (ssList(x_4) and app(cons(x_3, nil), x_4) = w and lt(x_1, x_3))))) or $\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ss z and $\exists x_7$: (ssItem(x_7) and $\exists x_8$: (ssList(x_8) and app(x_8, cons(x_7, nil)) = w and lt(x_7, x_5)))))))) or (nil $\neq x$ and nil = w) or ((nil $\neq v$ or nil = u) and ($\neg$ neq(v, nil) or (neq(u, nil) and segmentP(v, u))))))))) fof(co_1, conjecture)

SWC112-1.p cond_ne_segment_total1_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
ssList(sk_5) cnf($co1_7$, negated_conjecture)
ssList(sk_6) cnf($co1_8$, negated_conjecture)
app(app(sk_5, sk_3), sk_6) = sk_4 cnf($co1_9$, negated_conjecture)
strictorderedP(sk_3) cnf($co1_{10}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk_5 and ssItem(c) and ssList(d) and app(cons(c, nil), d) = sk_3) $\Rightarrow$ $\neg$ lt(a, c) cnf($co1_{11}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_6 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$ $\neg$ lt(c, a) cnf($co1_{12}$, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($co1_{13}$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($co1_{14}$, negated_conjecture)
(neq(sk_1, nil) and segmentP(sk_2, sk_1)) $\Rightarrow$ nil = sk_2 cnf($co1_{15}$, negated_conjecture)
nil = sk_1 $\Rightarrow$ neq(sk_2, nil) cnf($co1_{16}$, negated_conjecture)
(nil = sk_1 and neq(sk_1, nil)) $\Rightarrow$ $\neg$ segmentP(sk_2, sk_1) cnf($co1_{17}$, negated_conjecture)

SWC113+1.p cond_ne_segment_total1_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or ($\forall y$: ($\neg$ ssItem(y) or cons(y, nil) w or $\neg$ memberP(x, y)) and (nil $\neq x$ or nil $\neq w$)) or ((nil $\neq v$ or nil = u) and ($\neg$ neq(v, nil) or (neq(u, nil) and segmentP(v, u

SWC113-1.p cond_ne_segment_total1_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
ssItem(sk_5) or nil = sk_4 cnf($co1_7$, negated_conjecture)
ssItem(sk_5) or nil = sk_3 cnf($co1_8$, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_4 cnf($co1_9$, negated_conjecture)
memberP(sk_4, sk_5) or nil = sk_4 cnf($co1_{10}$, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_3 cnf($co1_{11}$, negated_conjecture)
memberP(sk_4, sk_5) or nil = sk_3 cnf($co1_{12}$, negated_conjecture)

$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ and $\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$

SWC114+1.p cond_ne_segment_total2_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $(\mathrm{nil} = v$ and $\mathrm{nil} = u)$ or $(\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, y)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $y \neq z$ and $\mathrm{memberP}(x, z)$ and $y \leq z)))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w))$ or $(\mathrm{neq}(u, \mathrm{nil})$ and $\mathrm{segmentP}(v, u)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC114-1.p cond_ne_segment_total2_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_5 \leq a) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_5 \leq a) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil}) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$

SWC115+1.p cond_ne_segment_total2_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $(\mathrm{nil} = v$ and $\mathrm{nil} = u)$ or $(\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, y)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $y \neq z$ and $\mathrm{memberP}(x, z)$ and $z \leq y)))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w))$ or $(\mathrm{neq}(u, \mathrm{nil})$ and $\mathrm{segmentP}(v, u)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC115-1.p cond_ne_segment_total2_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

(ssItem(a) and memberP(sk_4, a) and $a \leq \mathrm{sk}_5$) $\Rightarrow$ ($\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_4$) cnf($\mathrm{co1}_{12}$, negated_conjecture)
cons(sk_5, nil) = sk_3 or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
memberP($\mathrm{sk}_4, \mathrm{sk}_5$) or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{14}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $a \leq \mathrm{sk}_5$) $\Rightarrow$ ($\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_3$) cnf($\mathrm{co1}_{15}$, negated_conjecture)
neq(sk_1, nil) $\Rightarrow$ $\neg$ segmentP($\mathrm{sk}_2, \mathrm{sk}_1$) cnf($\mathrm{co1}_{16}$, negated_conjecture)

SWC116+1.p cond_ne_segment_total2_x_ne_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (nil $\neq w$ and nil = x) or (nil = v and nil = u) or (neq(u, nil) and segmentP(v, u)) or (neq(x, nil) and ($\neg$ neq(w, nil) or $\neg$ segmentP(x, w))))))))

SWC116-1.p cond_ne_segment_total2_x_ne_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_4$ $\Rightarrow$ $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_7$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_2$ $\Rightarrow$ $\mathrm{nil} \neq \mathrm{sk}_1$ cnf($\mathrm{co1}_8$, negated_conjecture)
neq(sk_1, nil) $\Rightarrow$ $\neg$ segmentP($\mathrm{sk}_2, \mathrm{sk}_1$) cnf($\mathrm{co1}_9$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_3, nil) cnf($\mathrm{co1}_{10}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ segmentP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_{11}$, negated_conjecture)

SWC117+1.p cond_ne_segment_total2_x_run_eq_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\neg$ equalelem
v and nil = u) or (neq(u, nil) and segmentP(v, u))))))) fof(co_1, conjecture)

SWC117-1.p cond_ne_segment_total2_x_run_eq_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
segmentP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_7$, negated_conjecture)
equalelemsP(sk_3) cnf($\mathrm{co1}_8$, negated_conjecture)
(ssList(a) and neq(sk_3, a) and segmentP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ equalelemsP(a) cnf($\mathrm{co1}_9$, negated_conjecture
$\mathrm{nil} = \mathrm{sk}_2$ $\Rightarrow$ $\mathrm{nil} \neq \mathrm{sk}_1$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
neq(sk_1, nil) $\Rightarrow$ $\neg$ segmentP($\mathrm{sk}_2, \mathrm{sk}_1$) cnf($\mathrm{co1}_{11}$, negated_conjecture)

SWC118+1.p cond_ne_segment_total2_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ $\forall z$: (ssList(z) $\Rightarrow$ (app(app(y, w), z) $\neq x$ or $\neg$ totalorderedP(w) or $\exists x_1$: (ssItem(x_1) and $\exists x_2$: (ssList(x_2) and app(x_2, cons(x_1 y and $\exists x_3$: (ssItem(x_3) and $\exists x_4$: (ssList(x_4) and app(cons(x_3, nil), x_4) = w and $x_1 \leq x_3$)))) or $\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ssI z and $\exists x_7$: (ssItem(x_7) and $\exists x_8$: (ssList(x_8) and app(x_8, cons(x_7, nil)) = w and $x_7 \leq x_5$))))))) or (nil $\neq x$ and nil = w) or (nil = v and nil = u) or (neq(u, nil) and segmentP(v, u))))))) fof(co$_1$, conjecture)

SWC118-1.p cond_ne_segment_total2_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
ssList(sk$_5$) cnf(co1$_7$, negated_conjecture)
ssList(sk$_6$) cnf(co1$_8$, negated_conjecture)
app(app(sk$_5$, sk$_3$), sk$_6$) = sk$_4$ cnf(co1$_9$, negated_conjecture)
totalorderedP(sk$_3$) cnf(co1$_{10}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk$_5$ and ssItem(c) and ssList(d) and app(cons(c, nil), d) = sk$_3$) $\Rightarrow$ $\neg\, a \leq c$ cnf(co1$_{11}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk$_6$ and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk$_3$) $\Rightarrow$ $\neg\, c \leq a$ cnf(co1$_{12}$, negated_conjecture)
nil = sk$_3$ $\Rightarrow$ nil = sk$_4$ cnf(co1$_{13}$, negated_conjecture)
nil = sk$_2$ $\Rightarrow$ nil $\neq$ sk$_1$ cnf(co1$_{14}$, negated_conjecture)
neq(sk$_1$, nil) $\Rightarrow$ $\neg$ segmentP(sk$_2$, sk$_1$) cnf(co1$_{15}$, negated_conjecture)

SWC119+1.p cond_ne_segment_total2_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (nil $\neq w$ and nil = x) or (nil = v and nil = u) or ($\forall y$: (ssItem(y) $\Rightarrow$ (cons(y, nil) $\neq w$ or $\neg$ memberP(x, y))) and neq(x, nil)) or (neq(u, nil) and

SWC119-1.p cond_ne_segment_total2_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
nil = sk$_4$ $\Rightarrow$ nil = sk$_3$ cnf(co1$_7$, negated_conjecture)
nil = sk$_2$ $\Rightarrow$ nil $\neq$ sk$_1$ cnf(co1$_8$, negated_conjecture)
neq(sk$_4$, nil) $\Rightarrow$ ssItem(sk$_5$) cnf(co1$_9$, negated_conjecture)
neq(sk$_4$, nil) $\Rightarrow$ cons(sk$_5$, nil) = sk$_3$ cnf(co1$_{10}$, negated_conjecture)
neq(sk$_4$, nil) $\Rightarrow$ memberP(sk$_4$, sk$_5$) cnf(co1$_{11}$, negated_conjecture)
neq(sk$_1$, nil) $\Rightarrow$ $\neg$ segmentP(sk$_2$, sk$_1$) cnf(co1$_{12}$, negated_conjecture)

SWC120+1.p cond_ne_segment_x_head2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\exists y$: (ssList(y) a
y and $\exists z$: (ssList(z) and tl(x) = z and app(w, z) = y and neq(nil, x))) or (neq(u, nil) and segmentP(v, u))) and ($\neg$ neq(v, nil)

SWC120-1.p cond_ne_segment_x_head2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_8$, negated_conjecture)
(ssList(a) and ssList(b) and tl(sk_4) = b and app(sk_3, b) = a and neq(nil, sk_4)) $\Rightarrow$ ($\mathrm{sk}_4 = a$ or neq(sk_2, nil)) cnf($\mathrm{co1}_9$, nega
(neq(sk_1, nil) and segmentP($\mathrm{sk}_2, \mathrm{sk}_1$)) $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_{10}$, negated_conjecture)
(ssList(a) and ssList(b) and tl(sk_4) = b and app(sk_3, b) = a and neq(nil, sk_4) and neq(sk_4, nil)) $\Rightarrow$ $\mathrm{sk}_4 = a$ cnf($\mathrm{co1}_{11}$, neg
(neq(sk_1, nil) and segmentP($\mathrm{sk}_2, \mathrm{sk}_1$)) $\Rightarrow$ $\neg$ neq(sk_4, nil) cnf($\mathrm{co1}_{12}$, negated_conjecture)

SWC121+1.p cond_ne_segment_x_ne_segment
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\neg$ neq(w, nil) o

SWC121-1.p cond_ne_segment_x_ne_segment
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_8$, negated_conjecture)
neq(sk_3, nil) or neq(sk_2, nil) cnf($\mathrm{co1}_9$, negated_conjecture)
segmentP($\mathrm{sk}_4, \mathrm{sk}_3$) or neq($\mathrm{sk}_2$, nil) cnf($\mathrm{co1}_{10}$, negated_conjecture)
(neq(sk_1, nil) and segmentP($\mathrm{sk}_2, \mathrm{sk}_1$)) $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_{11}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_3, nil) cnf($\mathrm{co1}_{12}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ segmentP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_{13}$, negated_conjecture)
(neq(sk_1, nil) and segmentP($\mathrm{sk}_2, \mathrm{sk}_1$)) $\Rightarrow$ $\neg$ neq(sk_4, nil) cnf($\mathrm{co1}_{14}$, negated_conjecture)

SWC122+1.p cond_ne_segment_x_ne_segment_rear_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or (nil $\neq$
w and nil = x) or (neq(u, nil) and segmentP(v, u)) or (neq(x, nil) and ($\neg$ neq(w, nil) or $\neg$ rearsegP(x, w)))))))) fof(co_1, co

SWC122-1.p cond_ne_segment_x_ne_segment_rear_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil}) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC123+1.p cond_ne_segment_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\neg\, \mathrm{frontsegP}(x, w$

SWC123-1.p cond_ne_segment_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{frontsegP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{equalelemsP}(a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjectur}$
$\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil}) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC124+1.p cond_ne_segment_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$
$(\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{totalorderedP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssItem}(x$
w and $x_2 \leq z)))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w)$ or $(\mathrm{neq}(u, \mathrm{nil})$ and $\mathrm{segmentP}(v, u)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC124-1.p cond_ne_segment_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, c \leq a$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil}) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ cnf($\mathrm{co1}_{13}$, negated_conjecture)

SWC125+1.p cond_ne_segment_x_run_strict_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\neg\, \mathrm{segmentP}(x, w$

SWC125-1.p cond_ne_segment_x_run_strict_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
segmentP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_8$, negated_conjecture)
strictorderedP(sk_3) cnf($\mathrm{co1}_9$, negated_conjecture)
(ssList(a) and neq(sk_3, a) and segmentP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg\, \mathrm{strictorderedP}(a)$ cnf($\mathrm{co1}_{10}$, negated_conject
$\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil}) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ cnf($\mathrm{co1}_{11}$, negated_conjecture)

SWC126+1.p cond_ne_segment_x_some1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\forall y$: (ssItem(y)
(cons(y, nil) $\neq w$ or $\neg\, \mathrm{memberP}(x, y)$)) or (neq($u$, nil) and segmentP($v, u$))) and ($\neg\, \mathrm{neq}(v, \mathrm{nil})$ or neq(x, nil)))))))) fof(co_1

SWC126-1.p cond_ne_segment_x_some1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ cnf($\mathrm{co1}_8$, negated_conjecture)
ssItem(sk_5) or neq(sk_2, nil) cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or neq(sk_2, nil) cnf($\mathrm{co1}_{10}$, negated_conjecture)
memberP($\mathrm{sk}_4, \mathrm{sk}_5$) or neq($\mathrm{sk}_2$, nil) cnf($\mathrm{co1}_{11}$, negated_conjecture)
(neq(sk_1, nil) and segmentP($\mathrm{sk}_2, \mathrm{sk}_1$)) $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_{12}$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ cnf($\mathrm{co1}_{14}$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ cnf($\mathrm{co1}_{15}$, negated_conjecture)
(neq(sk_1, nil) and segmentP($\mathrm{sk}_2, \mathrm{sk}_1$)) $\Rightarrow$ $\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ cnf($\mathrm{co1}_{16}$, negated_conjecture)

SWC127+1.p cond_ne_segment_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\neg$ segmentP(x, w

SWC127-1.p cond_ne_segment_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
neq(sk_2, nil) cnf($co1_7$, negated_conjecture)
segmentP(sk_4, sk_3) cnf($co1_8$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ singletonP(sk_3) cnf($co1_9$, negated_conjecture)
neq(sk_1, nil) $\Rightarrow$ $\neg$ segmentP(sk_2, sk_1) cnf($co1_{10}$, negated_conjecture)

SWC128+1.p cond_pr_works_always_x_filter_segment
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$true fof($co_1$, conjecture)

SWC128-1.p cond_pr_works_always_x_filter_segment
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$false cnf($co1_1$, negated_conjecture)

SWC129+1.p cond_pr_works_on_cycles_x_dup_tos
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or neq(x, nil) or cyclefreeP(v))))))

SWC129-1.p cond_pr_works_on_cycles_x_dup_tos
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
$\neg$ neq(sk_4, nil) cnf($co1_7$, negated_conjecture)
$\neg$ cyclefreeP(sk_2) cnf($co1_8$, negated_conjecture)

SWC130+1.p cond_pr_works_on_cycles_x_head1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or neq(x, nil) or cyclefreeP(v))))))

SWC130-1.p cond_pr_works_on_cycles_x_head1

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{cyclefreeP}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC131+1.p cond_pr_works_on_cycles_x_ne_segment_rear
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\mathrm{neq}(x, \mathrm{nil})$ or $\mathrm{cyclefreeP}(v))))))$

SWC131-1.p cond_pr_works_on_cycles_x_ne_segment_rear
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{cyclefreeP}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC132+1.p cond_pr_works_on_cycles_x_rot_l2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\mathrm{neq}(x, \mathrm{nil})$ or $\mathrm{cyclefreeP}(v))))))$

SWC132-1.p cond_pr_works_on_cycles_x_rot_l2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{cyclefreeP}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC133+1.p cond_pr_works_on_cycles_x_rot_r2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\mathrm{neq}(x, \mathrm{nil})$ or $\mathrm{cyclefreeP}(v))))))$

SWC133-1.p cond_pr_works_on_cycles_x_rot_r2

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\text{ssList}(\text{sk}_1)$ $\text{cnf}(\text{co1}_1, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_2)$ $\text{cnf}(\text{co1}_2, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_3)$ $\text{cnf}(\text{co1}_3, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_4)$ $\text{cnf}(\text{co1}_4, \text{negated\_conjecture})$
$\text{sk}_2 = \text{sk}_4$ $\text{cnf}(\text{co1}_5, \text{negated\_conjecture})$
$\text{sk}_1 = \text{sk}_3$ $\text{cnf}(\text{co1}_6, \text{negated\_conjecture})$
$\neg\, \text{neq}(\text{sk}_4, \text{nil})$ $\text{cnf}(\text{co1}_7, \text{negated\_conjecture})$
$\neg\, \text{cyclefreeP}(\text{sk}_2)$ $\text{cnf}(\text{co1}_8, \text{negated\_conjecture})$

SWC134+1.p cond_pr_works_on_cycles_x_segment_rear_ne
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\text{ssList}(u) \Rightarrow \forall v$: $(\text{ssList}(v) \Rightarrow \forall w$: $(\text{ssList}(w) \Rightarrow \forall x$: $(\text{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\text{neq}(x, \text{nil})$ or $\text{cyclefreeP}(v))))))$

SWC134-1.p cond_pr_works_on_cycles_x_segment_rear_ne
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\text{ssList}(\text{sk}_1)$ $\text{cnf}(\text{co1}_1, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_2)$ $\text{cnf}(\text{co1}_2, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_3)$ $\text{cnf}(\text{co1}_3, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_4)$ $\text{cnf}(\text{co1}_4, \text{negated\_conjecture})$
$\text{sk}_2 = \text{sk}_4$ $\text{cnf}(\text{co1}_5, \text{negated\_conjecture})$
$\text{sk}_1 = \text{sk}_3$ $\text{cnf}(\text{co1}_6, \text{negated\_conjecture})$
$\neg\, \text{neq}(\text{sk}_4, \text{nil})$ $\text{cnf}(\text{co1}_7, \text{negated\_conjecture})$
$\neg\, \text{cyclefreeP}(\text{sk}_2)$ $\text{cnf}(\text{co1}_8, \text{negated\_conjecture})$

SWC135+1.p cond_pr_works_on_cycles_x_tail2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\text{ssList}(u) \Rightarrow \forall v$: $(\text{ssList}(v) \Rightarrow \forall w$: $(\text{ssList}(w) \Rightarrow \forall x$: $(\text{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\text{neq}(x, \text{nil})$ or $\text{cyclefreeP}(v))))))$

SWC135-1.p cond_pr_works_on_cycles_x_tail2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\text{ssList}(\text{sk}_1)$ $\text{cnf}(\text{co1}_1, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_2)$ $\text{cnf}(\text{co1}_2, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_3)$ $\text{cnf}(\text{co1}_3, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_4)$ $\text{cnf}(\text{co1}_4, \text{negated\_conjecture})$
$\text{sk}_2 = \text{sk}_4$ $\text{cnf}(\text{co1}_5, \text{negated\_conjecture})$
$\text{sk}_1 = \text{sk}_3$ $\text{cnf}(\text{co1}_6, \text{negated\_conjecture})$
$\neg\, \text{neq}(\text{sk}_4, \text{nil})$ $\text{cnf}(\text{co1}_7, \text{negated\_conjecture})$
$\neg\, \text{cyclefreeP}(\text{sk}_2)$ $\text{cnf}(\text{co1}_8, \text{negated\_conjecture})$

SWC136+1.p cond_pr_works_on_nonempty_x_del_max
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\text{ssList}(u) \Rightarrow \forall v$: $(\text{ssList}(v) \Rightarrow \forall w$: $(\text{ssList}(w) \Rightarrow \forall x$: $(\text{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \text{neq}(v, \text{nil})$ or $\text{neq}(x, \text{nil}))))))$

SWC136-1.p cond_pr_works_on_nonempty_x_del_max

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC137+1.p cond_pr_works_on_nonempty_x_greatest
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u\colon (\mathrm{ssList}(u) \Rightarrow \forall v\colon (\mathrm{ssList}(v) \Rightarrow \forall w\colon (\mathrm{ssList}(w) \Rightarrow \forall x\colon (\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \mathrm{totalorderP}(x)))$

SWC137-1.p cond_pr_works_on_nonempty_x_greatest
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{totalorderP}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC138+1.p cond_pr_works_on_nonempty_x_id_front
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u\colon (\mathrm{ssList}(u) \Rightarrow \forall v\colon (\mathrm{ssList}(v) \Rightarrow \forall w\colon (\mathrm{ssList}(w) \Rightarrow \forall x\colon (\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \mathrm{neq}(x, \mathrm{nil}))))))$

SWC138-1.p cond_pr_works_on_nonempty_x_id_front
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC139+1.p cond_pr_works_on_nonempty_x_id_rear
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u\colon (\mathrm{ssList}(u) \Rightarrow \forall v\colon (\mathrm{ssList}(v) \Rightarrow \forall w\colon (\mathrm{ssList}(w) \Rightarrow \forall x\colon (\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \mathrm{neq}(x, \mathrm{nil}))))))$

SWC139-1.p cond_pr_works_on_nonempty_x_id_rear

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC140+1.p cond_pr_works_on_nonempty_x_lead
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u\colon (\mathrm{ssList}(u) \Rightarrow \forall v\colon (\mathrm{ssList}(v) \Rightarrow \forall w\colon (\mathrm{ssList}(w) \Rightarrow \forall x\colon (\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \mathrm{neq}(x, \mathrm{nil}))))))$

SWC140-1.p cond_pr_works_on_nonempty_x_lead
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC141+1.p cond_pr_works_on_nonempty_x_rot_l1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u\colon (\mathrm{ssList}(u) \Rightarrow \forall v\colon (\mathrm{ssList}(v) \Rightarrow \forall w\colon (\mathrm{ssList}(w) \Rightarrow \forall x\colon (\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \mathrm{neq}(x, \mathrm{nil}))))))$

SWC141-1.p cond_pr_works_on_nonempty_x_rot_l1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC142+1.p cond_pr_works_on_nonempty_x_rot_r1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u\colon (\mathrm{ssList}(u) \Rightarrow \forall v\colon (\mathrm{ssList}(v) \Rightarrow \forall w\colon (\mathrm{ssList}(w) \Rightarrow \forall x\colon (\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \mathrm{neq}(x, \mathrm{nil}))))))$

SWC142-1.p cond_pr_works_on_nonempty_x_rot_r1

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC143+1.p cond_pr_works_on_nonempty_x_tail1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u\colon (\mathrm{ssList}(u) \Rightarrow \forall v\colon (\mathrm{ssList}(v) \Rightarrow \forall w\colon (\mathrm{ssList}(w) \Rightarrow \forall x\colon (\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \mathrm{neq}(x, \mathrm{nil}))))))$

SWC143-1.p cond_pr_works_on_nonempty_x_tail1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC144+1.p cond_pr_works_on_pairs_x_filter_ne_segment
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u\colon (\mathrm{ssList}(u) \Rightarrow \forall v\colon (\mathrm{ssList}(v) \Rightarrow \forall w\colon (\mathrm{ssList}(w) \Rightarrow \forall x\colon (\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \mathrm{neq}(x, \mathrm{nil}) \text{ or sin}$

SWC144-1.p cond_pr_works_on_pairs_x_filter_ne_segment
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{singletonP}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC145+1.p cond_pr_works_on_pairs_x_head2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u\colon (\mathrm{ssList}(u) \Rightarrow \forall v\colon (\mathrm{ssList}(v) \Rightarrow \forall w\colon (\mathrm{ssList}(w) \Rightarrow \forall x\colon (\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \mathrm{neq}(x, \mathrm{nil}) \text{ or sin}$

SWC145-1.p cond_pr_works_on_pairs_x_head2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{singletonP}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC146+1.p cond_pr_works_on_pairs_x_id_segment
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})$ or sin

SWC146-1.p cond_pr_works_on_pairs_x_id_segment
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{singletonP}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC147+1.p cond_pr_works_on_pairs_x_ne_segment
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})$ or sin

SWC147-1.p cond_pr_works_on_pairs_x_ne_segment
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{singletonP}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC148+1.p cond_pr_works_on_pairs_x_smallest

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or singletonP(v) or

SWC148-1.p cond_pr_works_on_pairs_x_smallest
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
$\neg$ singletonP(sk_2) cnf($\mathrm{co1}_8$, negated_conjecture)
$\neg$ totalorderP(sk_4) cnf($\mathrm{co1}_9$, negated_conjecture)

SWC149+1.p cond_pr_works_on_pairs_x_swap_ends
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssItem(y) a
x))) or singletonP(v)))))) fof(co_1, conjecture)

SWC149-1.p cond_pr_works_on_pairs_x_swap_ends
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssItem(b) and ssList(c)) $\Rightarrow$ app(app(cons(a, nil), cons(b, nil)), c) $\neq \mathrm{sk}_4$ cnf($\mathrm{co1}_8$, negated_conjecture)
$\neg$ singletonP(sk_2) cnf($\mathrm{co1}_9$, negated_conjecture)

SWC150+1.p cond_pr_works_on_pairs_x_tail1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or neq(x, nil) or sin

SWC150-1.p cond_pr_works_on_pairs_x_tail1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)

$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{singletonP}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC151+1.p cond_pr_works_on_total_ord_x_pr_works_on_total_ord
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ totalorderP(v) or totalorderP(

SWC151-1.p cond_pr_works_on_total_ord_x_pr_works_on_total_ord
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{totalorderP}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{totalorderP}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC152+1.p cond_pst_cyc_sorted_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: (ssItem(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ $\forall x_3$: ($\neg$ ssList(x_3) or app(app(app(app(x_1, cons(y, nil)), x_2), cons(
u or $\neg\, z \leq y$ or ($\forall x_4$: ($\neg$ ssItem(x_4) or $\neg$ memberP(x_2, x_4) or ($y \leq x_4$ and $x_4 \leq z$)) and $y \leq z$))))))) or ($\forall x_5$: ($\neg$ ssItem(x_5) or
w or $\neg$ memberP(x, x_5) or $\exists x_6$: (ssItem(x_6) and $x_5 \neq x_6$ and memberP(x, x_6) and $x_5 \leq x_6$)) and (nil $\neq x$ or nil $\neq$
w))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC152-1.p cond_pst_cyc_sorted_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_8), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_6 \leq \mathrm{sk}_5$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_6 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_6 \Rightarrow \mathrm{memberP}(\mathrm{sk}_8, \mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
($\mathrm{sk}_5 \leq \mathrm{sk}_{10}$ and $\mathrm{sk}_{10} \leq \mathrm{sk}_6$) $\Rightarrow \neg\, \mathrm{sk}_5 \leq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_{11})$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_{11})$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_{11}, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_{11})$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$

(ssItem(a) and memberP(sk_4, a) and $\mathrm{sk}_{11} \leq a$) $\Rightarrow$ ($\mathrm{sk}_{11} = a$ or $\mathrm{nil} = \mathrm{sk}_4$) cnf($\mathrm{co1}_{21}$, negated_conjecture)
cons($\mathrm{sk}_{11}, \mathrm{nil}$) = sk_3 or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{22}$, negated_conjecture)
memberP($\mathrm{sk}_4, \mathrm{sk}_{11}$) or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{23}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\mathrm{sk}_{11} \leq a$) $\Rightarrow$ ($\mathrm{sk}_{11} = a$ or $\mathrm{nil} = \mathrm{sk}_3$) cnf($\mathrm{co1}_{24}$, negated_conjecture)

SWC153+1.p cond_pst_cyc_sorted_x_pst_cyc_sorted
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($x \neq v$ or $w \neq u$ or $\exists y$: (ssItem(y) and $\exists z$: (ssItem(z w and $z \leq y$ and ($\neg\, y \leq z$ or $\exists x_4$: (ssItem(x_4) and memberP(x_2, x_4) and ($\neg\, y \leq x_4$ or $\neg\, x_4 \leq z$)))))))) or $\forall x_5$: (ssItem(x_5) $\Rightarrow$ $\forall x_6$: (ssItem(x_6) $\Rightarrow$ $\forall x_7$: (ssList(x_7) $\Rightarrow$ $\forall x_8$: (ssList(x_8) $\Rightarrow$ $\forall x_9$: (ssList(x_9) $\Rightarrow$ (app(app(app(app(x_7, cons(x_5, nil)), x_8), co u or $\neg\, x_6 \leq x_5$ or ($\forall x_{10}$: (ssItem(x_{10}) $\Rightarrow$ ($\neg$ memberP(x_8, x_{10}) or ($x_{10} \leq x_6$ and $x_5 \leq x_{10}$))) and $x_5 \leq x_6$)))))))))))) fof(c

SWC153-1.p cond_pst_cyc_sorted_x_pst_cyc_sorted
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_4 = \mathrm{sk}_2$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_3 = \mathrm{sk}_1$ cnf($\mathrm{co1}_6$, negated_conjecture)
(ssItem(a) and ssItem(b) and ssList(c) and ssList(d) and ssList(e) and app(app(app(app(c, cons(a, nil)), d), cons(b, nil)), e) = sk_3 and $b \leq a$) $\Rightarrow$ $a \leq b$ cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssItem(b) and ssList(c) and ssList(d) and ssList(e) and app(app(app(app(c, cons(a, nil)), d), cons(b, nil)), e) = sk_3 and $b \leq a$ and ssItem(f) and memberP(d, f)) $\Rightarrow$ $a \leq f$ cnf($\mathrm{co1}_8$, negated_conjecture)
(ssItem(a) and ssItem(b) and ssList(c) and ssList(d) and ssList(e) and app(app(app(app(c, cons(a, nil)), d), cons(b, nil)), e) = sk_3 and $b \leq a$ and ssItem(f) and memberP(d, f)) $\Rightarrow$ $f \leq b$ cnf($\mathrm{co1}_9$, negated_conjecture)
ssItem(sk_5) cnf($\mathrm{co1}_{10}$, negated_conjecture)
ssItem(sk_6) cnf($\mathrm{co1}_{11}$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_{12}$, negated_conjecture)
ssList(sk_8) cnf($\mathrm{co1}_{13}$, negated_conjecture)
ssList(sk_9) cnf($\mathrm{co1}_{14}$, negated_conjecture)
app(app(app(app(sk_7, cons(sk_5, nil)), sk_8), cons(sk_6, nil)), sk_9) = sk_1 cnf($\mathrm{co1}_{15}$, negated_conjecture)
$\mathrm{sk}_6 \leq \mathrm{sk}_5$ cnf($\mathrm{co1}_{16}$, negated_conjecture)
$\mathrm{sk}_5 \leq \mathrm{sk}_6$ $\Rightarrow$ ssItem(sk_{10}) cnf($\mathrm{co1}_{17}$, negated_conjecture)
$\mathrm{sk}_5 \leq \mathrm{sk}_6$ $\Rightarrow$ memberP($\mathrm{sk}_8, \mathrm{sk}_{10}$) cnf($\mathrm{co1}_{18}$, negated_conjecture)
($\mathrm{sk}_{10} \leq \mathrm{sk}_6$ and $\mathrm{sk}_5 \leq \mathrm{sk}_{10}$) $\Rightarrow$ $\neg\, \mathrm{sk}_5 \leq \mathrm{sk}_6$ cnf($\mathrm{co1}_{19}$, negated_conjecture)

SWC154+1.p cond_pst_cyc_sorted_x_pst_equal1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and $\exists z$: (ssItem(z z and app(app(app(x_1, cons(y, nil)), cons(z, nil)), x_2) = w)))) or $\forall x_3$: (ssItem(x_3) $\Rightarrow$ $\forall x_4$: (ssItem(x_4) $\Rightarrow$ $\forall x_5$: (ssList(x_5) $\Rightarrow$ $\forall x_6$: (ssList(x_6) $\Rightarrow$ $\forall x_7$: (ssList(x_7) $\Rightarrow$ (app(app(app(app(x_5, cons(x_3, nil)), x_6), cons(x_4, nil)), x_7) $\neq u$ or $\neg\, x_4 \leq$ x_3 or ($\forall x_8$: (ssItem(x_8) $\Rightarrow$ ($\neg$ memberP(x_6, x_8) or ($x_3 \leq x_8$ and $x_8 \leq x_4$))) and $x_3 \leq x_4$)))))))))))) fof(co_1, conjecture)

SWC154-1.p cond_pst_cyc_sorted_x_pst_equal1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{app}(\mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})), \mathrm{cons}(b, \mathrm{nil})), d) = \mathrm{sk}_3) \Rightarrow a = b$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_8), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_6 \leq \mathrm{sk}_5$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_6 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_6 \Rightarrow \mathrm{memberP}(\mathrm{sk}_8, \mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{sk}_5 \leq \mathrm{sk}_{10}$ and $\mathrm{sk}_{10} \leq \mathrm{sk}_6) \Rightarrow \neg\, \mathrm{sk}_5 \leq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

SWC155+1.p cond_pst_cyc_sorted_x_pst_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z$
w and $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $((\neg\, y \leq x_2$ and $\mathrm{memberP}(x_1, x_2))$ or $(\neg\, x_2 \leq y$ and $\mathrm{memberP}(z, x_2)))))))$ or $\forall x_3$: $(\mathrm{ssItem}(x_3) \Rightarrow$
$\forall x_4$: $(\mathrm{ssItem}(x_4) \Rightarrow \forall x_5$: $(\mathrm{ssList}(x_5) \Rightarrow \forall x_6$: $(\mathrm{ssList}(x_6) \Rightarrow \forall x_7$: $(\mathrm{ssList}(x_7) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_5, \mathrm{cons}(x_3, \mathrm{nil})), x_6), \mathrm{co}$
u or $\neg\, x_4 \leq x_3$ or $(\forall x_8$: $(\mathrm{ssItem}(x_8) \Rightarrow (\neg\, \mathrm{memberP}(x_6, x_8)$ or $(x_3 \leq x_8$ and $x_8 \leq x_4)))$ and $x_3 \leq x_4))))))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{c}$

SWC155-1.p cond_pst_cyc_sorted_x_pst_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_3$ and $\mathrm{ssItem}(d)$ and $\mathrm{memberP}(c, d)) \Rightarrow a \leq d$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_3$ and $\mathrm{ssItem}(d)$ and $\mathrm{memberP}(b, d)) \Rightarrow d \leq a$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_8), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_6 \leq \mathrm{sk}_5$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_6 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_6 \Rightarrow \mathrm{memberP}(\mathrm{sk}_8, \mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$(\mathrm{sk}_5 \leq \mathrm{sk}_{10}$ and $\mathrm{sk}_{10} \leq \mathrm{sk}_6) \Rightarrow \neg\, \mathrm{sk}_5 \leq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC156+1.p cond_pst_cyc_sorted_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{frontsegP}(x, w)$ or $\neg\, \mathrm{equalelem}$
$\forall x_1$: $(\mathrm{ssItem}(x_1) \Rightarrow \forall x_2$: $(\mathrm{ssList}(x_2) \Rightarrow \forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow \forall x_4$: $(\mathrm{ssList}(x_4) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_2, \mathrm{cons}(z, \mathrm{nil})), x_3), \mathrm{con}$
u or $\neg\, x_1 \leq z$ or $(\forall x_5$: $(\mathrm{ssItem}(x_5) \Rightarrow (\neg\, \mathrm{memberP}(x_3, x_5)$ or $(z \leq x_5$ and $x_5 \leq x_1)))$ and $z \leq x_1))))))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conj}$

SWC156-1.p cond_pst_cyc_sorted_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{neq}(\mathrm{sk}_3, a) \text{ and } \mathrm{frontsegP}(\mathrm{sk}_4, a) \text{ and } \mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{equalelemsP}(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture}$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_8), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_6 \leq \mathrm{sk}_5$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_6 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_6 \Rightarrow \mathrm{memberP}(\mathrm{sk}_8, \mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$(\mathrm{sk}_5 \leq \mathrm{sk}_{10} \text{ and } \mathrm{sk}_{10} \leq \mathrm{sk}_6) \Rightarrow \neg\, \mathrm{sk}_5 \leq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$

SWC157+1.p cond_pst_cyc_sorted_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \forall y$: $(\mathrm{ssList}(y) \Rightarrow$
$\forall z$: $(\mathrm{ssList}(z) \Rightarrow (\mathrm{app}(\mathrm{app}(y, w), z) \neq x \text{ or } \neg\, \mathrm{equalelemsP}(w) \text{ or } \exists x_1$: $(\mathrm{ssItem}(x_1) \text{ and } \exists x_2$: $(\mathrm{ssList}(x_2) \text{ and } \mathrm{app}(x_2, \mathrm{cons}(x_1,$
y and $\exists x_3$: $(\mathrm{ssList}(x_3) \text{ and } \mathrm{app}(\mathrm{cons}(x_1, \mathrm{nil}), x_3) = w))) \text{ or } \exists x_4$: $(\mathrm{ssItem}(x_4) \text{ and } \exists x_5$: $(\mathrm{ssList}(x_5) \text{ and } \mathrm{app}(\mathrm{cons}(x_4, \mathrm{nil}), x_5) =$
z and $\exists x_6$: $(\mathrm{ssList}(x_6) \text{ and } \mathrm{app}(x_6, \mathrm{cons}(x_4, \mathrm{nil})) = w))))))$ or $\forall x_7$: $(\mathrm{ssItem}(x_7) \Rightarrow \forall x_8$: $(\mathrm{ssItem}(x_8) \Rightarrow \forall x_9$: $(\mathrm{ssList}(x_9) \Rightarrow$
$\forall x_{10}$: $(\mathrm{ssList}(x_{10}) \Rightarrow \forall x_{11}$: $(\mathrm{ssList}(x_{11}) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_9, \mathrm{cons}(x_7, \mathrm{nil})), x_{10}), \mathrm{cons}(x_8, \mathrm{nil})), x_{11}) \neq u \text{ or } \neg\, x_8 \leq$
x_7 or $(\forall x_{12}$: $(\mathrm{ssItem}(x_{12}) \Rightarrow (\neg\, \mathrm{memberP}(x_{10}, x_{12}) \text{ or } (x_7 \leq x_{12} \text{ and } x_{12} \leq x_8))) \text{ and } x_7 \leq x_8)))))))$ or $(\mathrm{nil} \neq$
x and $\mathrm{nil} = w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC157-1.p cond_pst_cyc_sorted_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_3), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_5 \text{ and } \mathrm{ssList}(c)) \Rightarrow \mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), c) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6 \text{ and } \mathrm{ssList}(c)) \Rightarrow \mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_con}$
$\mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_{11})$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_9, \mathrm{cons}(\mathrm{sk}_7, \mathrm{nil})), \mathrm{sk}_{10}), \mathrm{cons}(\mathrm{sk}_8, \mathrm{nil})), \mathrm{sk}_{11}) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_8 \leq \mathrm{sk}_7$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_7 \leq \mathrm{sk}_8 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_{12})$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_7 \leq \mathrm{sk}_8 \Rightarrow \mathrm{memberP}(\mathrm{sk}_{10}, \mathrm{sk}_{12})$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$
$(\mathrm{sk}_7 \leq \mathrm{sk}_{12}$ and $\mathrm{sk}_{12} \leq \mathrm{sk}_8) \Rightarrow \neg\, \mathrm{sk}_7 \leq \mathrm{sk}_8$ $\mathrm{cnf}(\mathrm{co1}_{22}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{23}, \mathrm{negated\_conjecture})$

SWC158+1.p cond_pst_cyc_sorted_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$ $(\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{totalorderedP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssItem}(x$ w and $x_2 \leq z)))))))$ or $\forall x_4$: $(\mathrm{ssItem}(x_4) \Rightarrow \forall x_5$: $(\mathrm{ssItem}(x_5) \Rightarrow \forall x_6$: $(\mathrm{ssList}(x_6) \Rightarrow \forall x_7$: $(\mathrm{ssList}(x_7) \Rightarrow$ $\forall x_8$: $(\mathrm{ssList}(x_8) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_6, \mathrm{cons}(x_4, \mathrm{nil})), x_7), \mathrm{cons}(x_5, \mathrm{nil})), x_8) \neq u$ or $\neg\, x_5 \leq x_4$ or $(\forall x_9$: $(\mathrm{ssItem}(x_9) \Rightarrow$ $(\neg\, \mathrm{memberP}(x_7, x_9)$ or $(x_4 \leq x_9$ and $x_9 \leq x_5)))$ and $x_4 \leq x_5)))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC158-1.p cond_pst_cyc_sorted_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, c \leq a$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_8, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9), \mathrm{cons}(\mathrm{sk}_7, \mathrm{nil})), \mathrm{sk}_{10}) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_7 \leq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_6 \leq \mathrm{sk}_7 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_{11})$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_6 \leq \mathrm{sk}_7 \Rightarrow \mathrm{memberP}(\mathrm{sk}_9, \mathrm{sk}_{11})$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$(\mathrm{sk}_6 \leq \mathrm{sk}_{11}$ and $\mathrm{sk}_{11} \leq \mathrm{sk}_7) \Rightarrow \neg\, \mathrm{sk}_6 \leq \mathrm{sk}_7$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$

SWC159+1.p cond_pst_cyc_sorted_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$ $\forall z$: $(\neg\, \mathrm{ssList}(z)$ or $\mathrm{app}(\mathrm{app}(y, w), z) \neq x$ or $\neg\, \mathrm{totalorderedP}(w)$ or $\exists x_1$: $(\mathrm{ssItem}(x_1)$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$ and $\mathrm{app}(x_2, \mathrm{cons}(x_1$ y and $\exists x_3$: $(\mathrm{ssItem}(x_3)$ and $\exists x_4$: $(\mathrm{ssList}(x_4)$ and $\mathrm{app}(\mathrm{cons}(x_3, \mathrm{nil}), x_4) = w$ and $x_1 \leq x_3))))$ or $\exists x_5$: $(\mathrm{ssItem}(x_5)$ and $\exists x_6$: $(\mathrm{ssI}$ z and $\exists x_7$: $(\mathrm{ssItem}(x_7)$ and $\exists x_8$: $(\mathrm{ssList}(x_8)$ and $\mathrm{app}(x_8, \mathrm{cons}(x_7, \mathrm{nil})) = w$ and $x_7 \leq x_5))))))$ or $\forall x_9$: $(\mathrm{ssItem}(x_9) \Rightarrow$
$\forall x_{10}$: $(\mathrm{ssItem}(x_{10}) \Rightarrow \forall x_{11}$: $(\mathrm{ssList}(x_{11}) \Rightarrow \forall x_{12}$: $(\mathrm{ssList}(x_{12}) \Rightarrow \forall x_{13}$: $(\neg\, \mathrm{ssList}(x_{13})$ or $\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_{11}, \mathrm{cons}(x_9, \mathrm{nil})$ u or $\neg\, x_{10} \leq x_9$ or $(\forall x_{14}$: $(\neg\, \mathrm{ssItem}(x_{14})$ or $\neg\, \mathrm{memberP}(x_{12}, x_{14})$ or $(x_9 \leq x_{14}$ and $x_{14} \leq x_{10}))$ and $x_9 \leq x_{10}))))))$ or $(\mathrm{nil} \neq$ x and $\mathrm{nil} = w)))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC159-1.p cond_pst_cyc_sorted_x_run_ord_max2

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_3), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{cons}(c, \mathrm{nil}), d) = \mathrm{sk}_3) \Rightarrow \neg\, a \leq c$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow \neg\, c \leq a$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_{11})$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_9, \mathrm{cons}(\mathrm{sk}_7, \mathrm{nil})), \mathrm{sk}_{10}), \mathrm{cons}(\mathrm{sk}_8, \mathrm{nil})), \mathrm{sk}_{11}) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_8 \leq \mathrm{sk}_7$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_7 \leq \mathrm{sk}_8 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_{12})$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_7 \leq \mathrm{sk}_8 \Rightarrow \mathrm{memberP}(\mathrm{sk}_{10}, \mathrm{sk}_{12})$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$
$(\mathrm{sk}_7 \leq \mathrm{sk}_{12}$ and $\mathrm{sk}_{12} \leq \mathrm{sk}_8) \Rightarrow \neg\, \mathrm{sk}_7 \leq \mathrm{sk}_8$ $\mathrm{cnf}(\mathrm{co1}_{22}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{23}, \mathrm{negated\_conjecture})$

SWC160+1.p cond_pst_cyc_sorted_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow (\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $\mathrm{app}(\mathrm{cons}(x_2, x_1), w) = x$ and $\mathrm{lt}(x_2, z)))))))$ or $\forall x_4$: $(\mathrm{ssItem}(x_4) \Rightarrow \forall x_5$: $(\mathrm{ssItem}(x_5) \Rightarrow \forall x_6$: $(\mathrm{ssList}(x_6) \Rightarrow \forall x_7$: $(\mathrm{ssList}(x_7) \Rightarrow \forall x_8$: $(\mathrm{ssList}(x_8) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_6, \mathrm{cons}(x_4, \mathrm{nil})), x_7), \mathrm{cons}(x_5, \mathrm{nil})), x_8) \neq u$ or $\neg\, x_5 \leq x_4$ or $(\forall x_9$: $(\mathrm{ssItem}(x_9) \Rightarrow (\neg\, \mathrm{memberP}(x_7, x_9)$ or $(x_4 \leq x_9$ and $x_9 \leq x_5)))$ and $x_4 \leq x_5)))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC160-1.p cond_pst_cyc_sorted_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow \neg\, \mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_8, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9), \mathrm{cons}(\mathrm{sk}_7, \mathrm{nil})), \mathrm{sk}_{10}) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_7 \leq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_6 \leq \mathrm{sk}_7 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_{11})$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_6 \leq \mathrm{sk}_7 \Rightarrow \mathrm{memberP}(\mathrm{sk}_9, \mathrm{sk}_{11})$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$(\mathrm{sk}_6 \leq \mathrm{sk}_{11}$ and $\mathrm{sk}_{11} \leq \mathrm{sk}_7) \Rightarrow \neg\, \mathrm{sk}_6 \leq \mathrm{sk}_7$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$

SWC161+1.p cond_pst_cyc_sorted_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\forall y$: ($\mathrm{ssList}(y) \Rightarrow$ $\forall z$: ($\neg\, \mathrm{ssList}(z)$ or $\mathrm{app}(\mathrm{app}(y, w), z) \neq x$ or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists x_1$: ($\mathrm{ssItem}(x_1)$ and $\exists x_2$: ($\mathrm{ssList}(x_2)$ and $\mathrm{app}(x_2, \mathrm{cons}(x_1$ y and $\exists x_3$: ($\mathrm{ssItem}(x_3)$ and $\exists x_4$: ($\mathrm{ssList}(x_4)$ and $\mathrm{app}(\mathrm{cons}(x_3, \mathrm{nil}), x_4) = w$ and $\mathrm{lt}(x_1, x_3)$))))) or $\exists x_5$: ($\mathrm{ssItem}(x_5)$ and $\exists x_6$: (ss z and $\exists x_7$: ($\mathrm{ssItem}(x_7)$ and $\exists x_8$: ($\mathrm{ssList}(x_8)$ and $\mathrm{app}(x_8, \mathrm{cons}(x_7, \mathrm{nil})) = w$ and $\mathrm{lt}(x_7, x_5)$))))))) or $\forall x_9$: ($\mathrm{ssItem}(x_9) \Rightarrow$ $\forall x_{10}$: ($\mathrm{ssItem}(x_{10}) \Rightarrow \forall x_{11}$: ($\mathrm{ssList}(x_{11}) \Rightarrow \forall x_{12}$: ($\mathrm{ssList}(x_{12}) \Rightarrow \forall x_{13}$: ($\neg\, \mathrm{ssList}(x_{13})$ or $\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_{11}, \mathrm{cons}(x_9, \mathrm{nil})$ u or $\neg\, x_{10} \leq x_9$ or ($\forall x_{14}$: ($\neg\, \mathrm{ssItem}(x_{14})$ or $\neg\, \mathrm{memberP}(x_{12}, x_{14})$ or ($x_9 \leq x_{14}$ and $x_{14} \leq x_{10}$)) and $x_9 \leq x_{10}$)))))) or ($\mathrm{nil} \neq$ x and $\mathrm{nil} = w$))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC161-1.p cond_pst_cyc_sorted_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_3), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
($\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{cons}(c, \mathrm{nil}), d) = \mathrm{sk}_3) \Rightarrow$ $\neg\, \mathrm{lt}(a, c)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
($\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$ $\neg\, \mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_{11})$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_9, \mathrm{cons}(\mathrm{sk}_7, \mathrm{nil})), \mathrm{sk}_{10}), \mathrm{cons}(\mathrm{sk}_8, \mathrm{nil})), \mathrm{sk}_{11}) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_8 \leq \mathrm{sk}_7$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_7 \leq \mathrm{sk}_8 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_{12})$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_7 \leq \mathrm{sk}_8 \Rightarrow \mathrm{memberP}(\mathrm{sk}_{10}, \mathrm{sk}_{12})$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$
$(\mathrm{sk}_7 \leq \mathrm{sk}_{12}$ and $\mathrm{sk}_{12} \leq \mathrm{sk}_8) \Rightarrow \neg\, \mathrm{sk}_7 \leq \mathrm{sk}_8$ $\mathrm{cnf}(\mathrm{co1}_{22}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{23}, \mathrm{negated\_conjecture})$

SWC162+1.p cond_pst_cyc_sorted_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\, \mathrm{segmentP}(x, w)$ or $\forall y$: (ssItem $\forall z$: ($\mathrm{ssItem}(z) \Rightarrow \forall x_1$: ($\mathrm{ssList}(x_1) \Rightarrow \forall x_2$: ($\mathrm{ssList}(x_2) \Rightarrow \forall x_3$: ($\mathrm{ssList}(x_3) \Rightarrow$ ($\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), x_2), \mathrm{cons}($ u or $\neg\, z \leq y$ or ($\forall x_4$: ($\mathrm{ssItem}(x_4) \Rightarrow$ ($\neg\, \mathrm{memberP}(x_2, x_4)$ or ($y \leq x_4$ and $x_4 \leq z$))) and $y \leq z$))))))) or ($\neg\, \mathrm{singletonP}(w)$ and

SWC162-1.p cond_pst_cyc_sorted_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_8), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_6 \leq \mathrm{sk}_5$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_6 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_6 \Rightarrow \mathrm{memberP}(\mathrm{sk}_8, \mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{sk}_5 \leq \mathrm{sk}_{10}$ and $\mathrm{sk}_{10} \leq \mathrm{sk}_6) \Rightarrow \neg\, \mathrm{sk}_5 \leq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{singletonP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC163+1.p cond_pst_diff_adj1_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow \forall z$: $(\mathrm{ssItem}(z) \Rightarrow \forall x_1$: $(\mathrm{ssList}(x_1) \Rightarrow \forall x_2$: $(\neg\, \mathrm{ssList}(x_2)$ or $\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), \mathrm{cons}(z, \mathrm{nil})), x_2) \neq u$ or $\mathrm{neq}(y, z)))))$ or $(\forall x_3$: $(\neg\, \mathrm{ssItem}(x_3)$ or $\mathrm{cons}(x_3, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, x_3)$ or $\exists x_4$: $(\mathrm{ssItem}(x_4)$ and $x_3 \neq x_4$ and $\mathrm{memberP}(x, x_4)$ and $x_3 \leq x_4))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC163-1.p cond_pst_diff_adj1_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_5, \mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_9 \leq a) \Rightarrow (\mathrm{sk}_9 = a$ or $\mathrm{nil} = \mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_9 \leq a) \Rightarrow (\mathrm{sk}_9 = a$ or $\mathrm{nil} = \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$

SWC164+1.p cond_pst_diff_adj1_x_minimal

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: (ssItem(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: ($\neg$ ssList(x_2) or app(app(app(x_1, cons(y, nil)), cons(z, nil)), x_2) $\neq$ u or neq(y, z))))) or ($\forall x_3$: ($\neg$ ssItem(x_3) or cons(x_3, nil) $\neq$ w or $\neg$ memberP(x, x_3) or $\exists x_4$: (ssItem(x_4) and $x_3 \neq x_4$ and memberP(x, x_4) and $x_4 \leq x_3$)) and (nil $\neq x$ or nil $\neq w$)))))) fof(co_1, conjecture)

SWC164-1.p cond_pst_diff_adj1_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssItem(sk_5) cnf(co1_7, negated_conjecture)
ssItem(sk_6) cnf(co1_8, negated_conjecture)
ssList(sk_7) cnf(co1_9, negated_conjecture)
ssList(sk_8) cnf(co1_{10}, negated_conjecture)
app(app(app(sk_7, cons(sk_5, nil)), cons(sk_6, nil)), sk_8) = sk_1 cnf(co1_{11}, negated_conjecture)
$\neg$ neq(sk_5, sk_6) cnf(co1_{12}, negated_conjecture)
ssItem(sk_9) or nil = sk_4 cnf(co1_{13}, negated_conjecture)
ssItem(sk_9) or nil = sk_3 cnf(co1_{14}, negated_conjecture)
cons(sk_9, nil) = sk_3 or nil = sk_4 cnf(co1_{15}, negated_conjecture)
memberP(sk_4, sk_9) or nil = sk_4 cnf(co1_{16}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $a \leq \text{sk}_9$) $\Rightarrow$ ($\text{sk}_9 = a$ or nil = sk_4) cnf(co1_{17}, negated_conjecture)
cons(sk_9, nil) = sk_3 or nil = sk_3 cnf(co1_{18}, negated_conjecture)
memberP(sk_4, sk_9) or nil = sk_3 cnf(co1_{19}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $a \leq \text{sk}_9$) $\Rightarrow$ ($\text{sk}_9 = a$ or nil = sk_3) cnf(co1_{20}, negated_conjecture)

SWC165+1.p cond_pst_diff_adj1_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: (ssItem(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ (app(app(app(x_1, cons(y, nil)), cons(z, nil)), x_2) $\neq$ u or neq(y, z)))))) or ($\forall x_3$: (ssItem(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $\Rightarrow$ $\forall x_5$: (ssList(x_5) $\Rightarrow$ (cons(x_3, nil) $\neq w$ or app(app(x_4, w), x_5) x or $\exists x_6$: (ssItem(x_6) and memberP(x_4, x_6) and lt(x_3, x_6)) or $\exists x_7$: (ssItem(x_7) and memberP(x_5, x_7) and lt(x_7, x_3)))))) and x or nil $\neq w$))))))) fof(co_1, conjecture)

SWC165-1.p cond_pst_diff_adj1_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssItem(sk_5) cnf(co1_7, negated_conjecture)
ssItem(sk_6) cnf(co1_8, negated_conjecture)
ssList(sk_7) cnf(co1_9, negated_conjecture)
ssList(sk_8) cnf(co1_{10}, negated_conjecture)

$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ cnf($\mathrm{co1}_{11}$, negated_conjecture)
$\neg\, \mathrm{neq}(\mathrm{sk}_5, \mathrm{sk}_6)$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
$\mathrm{ssItem}(\mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
$\mathrm{ssItem}(\mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{14}$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_{10})$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{15}$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_{11})$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{16}$, negated_conjecture)
$\mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{17}$, negated_conjecture)
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_{10}, \mathrm{sk}_3), \mathrm{sk}_{11}) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{18}$, negated_conjecture)
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_{10}, a)$ and $\mathrm{lt}(\mathrm{sk}_9, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{19}$, negated_conjecture)
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_{11}, a)$ and $\mathrm{lt}(a, \mathrm{sk}_9)) \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{20}$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_{10})$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{21}$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_{11})$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{22}$, negated_conjecture)
$\mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{23}$, negated_conjecture)
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_{10}, \mathrm{sk}_3), \mathrm{sk}_{11}) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{24}$, negated_conjecture)
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_{10}, a)$ and $\mathrm{lt}(\mathrm{sk}_9, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{25}$, negated_conjecture)
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_{11}, a)$ and $\mathrm{lt}(a, \mathrm{sk}_9)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{26}$, negated_conjecture)

SWC166+1.p cond_pst_diff_adj1_x_pst_singleton
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{singletonP}(w)$ or $\forall y$: ($\mathrm{ssItem}($
$\forall z$: ($\mathrm{ssItem}(z) \Rightarrow \forall x_1$: ($\mathrm{ssList}(x_1) \Rightarrow \forall x_2$: ($\mathrm{ssList}(x_2) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), \mathrm{cons}(z, \mathrm{nil})), x_2) \neq$
u or $\mathrm{neq}(y, z))))))))))$ fof(co_1, conjecture)

SWC166-1.p cond_pst_diff_adj1_x_pst_singleton
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_1$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_2)$ cnf($\mathrm{co1}_2$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_3)$ cnf($\mathrm{co1}_3$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_4)$ cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
$\mathrm{singletonP}(\mathrm{sk}_3)$ cnf($\mathrm{co1}_7$, negated_conjecture)
$\mathrm{ssItem}(\mathrm{sk}_5)$ cnf($\mathrm{co1}_8$, negated_conjecture)
$\mathrm{ssItem}(\mathrm{sk}_6)$ cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_7)$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_8)$ cnf($\mathrm{co1}_{11}$, negated_conjecture)
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
$\neg\, \mathrm{neq}(\mathrm{sk}_5, \mathrm{sk}_6)$ cnf($\mathrm{co1}_{13}$, negated_conjecture)

SWC167+1.p cond_pst_diff_adj1_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: ($\mathrm{ssList}(y) \Rightarrow$
$(\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists z$: ($\mathrm{ssItem}(z)$ and $\exists x_1$: ($\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: ($\mathrm{ssItem}($
w and $\mathrm{lt}(x_2, z)))))))$ or $\forall x_4$: ($\mathrm{ssItem}(x_4) \Rightarrow \forall x_5$: ($\mathrm{ssItem}(x_5) \Rightarrow \forall x_6$: ($\mathrm{ssList}(x_6) \Rightarrow \forall x_7$: ($\mathrm{ssList}(x_7) \Rightarrow$
$(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_6, \mathrm{cons}(x_4, \mathrm{nil})), \mathrm{cons}(x_5, \mathrm{nil})), x_7) \neq u$ or $\mathrm{neq}(x_4, x_5)))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w))))))$ fof(co_1, conjecture

SWC167-1.p cond_pst_diff_adj1_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_1$, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, \mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_8, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_7, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_6, \mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

SWC168+1.p cond_pst_diff_adj1_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\forall y$: ($\mathrm{ssList}(y) \Rightarrow$
$\forall z$: ($\neg\, \mathrm{ssList}(z)$ or $\mathrm{app}(\mathrm{app}(y, w), z) \neq x$ or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists x_1$: ($\mathrm{ssItem}(x_1)$ and $\exists x_2$: ($\mathrm{ssList}(x_2)$ and $\mathrm{app}(x_2, \mathrm{cons}(x_1$
y and $\exists x_3$: ($\mathrm{ssItem}(x_3)$ and $\exists x_4$: ($\mathrm{ssList}(x_4)$ and $\mathrm{app}(\mathrm{cons}(x_3, \mathrm{nil}), x_4) = w$ and $\mathrm{lt}(x_1, x_3)$))))) or $\exists x_5$: ($\mathrm{ssItem}(x_5)$ and $\exists x_6$: (ss
z and $\exists x_7$: ($\mathrm{ssItem}(x_7)$ and $\exists x_8$: ($\mathrm{ssList}(x_8)$ and $\mathrm{app}(x_8, \mathrm{cons}(x_7, \mathrm{nil})) = w$ and $\mathrm{lt}(x_7, x_5)$))))))) or $\forall x_9$: ($\mathrm{ssItem}(x_9) \Rightarrow$
$\forall x_{10}$: ($\mathrm{ssItem}(x_{10}) \Rightarrow \forall x_{11}$: ($\mathrm{ssList}(x_{11}) \Rightarrow \forall x_{12}$: ($\neg\, \mathrm{ssList}(x_{12})$ or $\mathrm{app}(\mathrm{app}(\mathrm{app}(x_{11}, \mathrm{cons}(x_9, \mathrm{nil})), \mathrm{cons}(x_{10}, \mathrm{nil})), x_{12}) \neq$
u or $\mathrm{neq}(x_9, x_{10})$))))) or ($\mathrm{nil} \neq x$ and $\mathrm{nil} = w$))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC168-1.p cond_pst_diff_adj1_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_3), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{cons}(c, \mathrm{nil}), d) = \mathrm{sk}_3) \Rightarrow$
$\neg\, \mathrm{lt}(a, c)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, \mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_9, \mathrm{cons}(\mathrm{sk}_7, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_8, \mathrm{nil})), \mathrm{sk}_{10}) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_7, \mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$

SWC169+1.p cond_pst_diff_adj1_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.

include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: (ssItem(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: ($\neg$ ssList(x_2) or app(app(app(x_1, cons(y, nil)), cons(z, nil)), x_2) $\neq$ u or neq(y, z))))) or ($\forall x_3$: ($\neg$ ssItem(x_3) or cons(x_3, nil) $\neq w$ or $\neg$ memberP(x, x_3)) and (nil $\neq x$ or nil $\neq w$)))))) fof(co$_1$, c

SWC169-1.p cond_pst_diff_adj1_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
ssItem(sk$_5$) cnf(co1$_7$, negated_conjecture)
ssItem(sk$_6$) cnf(co1$_8$, negated_conjecture)
ssList(sk$_7$) cnf(co1$_9$, negated_conjecture)
ssList(sk$_8$) cnf(co1$_{10}$, negated_conjecture)
app(app(app(sk$_7$, cons(sk$_5$, nil)), cons(sk$_6$, nil)), sk$_8$) = sk$_1$ cnf(co1$_{11}$, negated_conjecture)
$\neg$ neq(sk$_5$, sk$_6$) cnf(co1$_{12}$, negated_conjecture)
ssItem(sk$_9$) or nil = sk$_4$ cnf(co1$_{13}$, negated_conjecture)
ssItem(sk$_9$) or nil = sk$_3$ cnf(co1$_{14}$, negated_conjecture)
cons(sk$_9$, nil) = sk$_3$ or nil = sk$_4$ cnf(co1$_{15}$, negated_conjecture)
memberP(sk$_4$, sk$_9$) or nil = sk$_4$ cnf(co1$_{16}$, negated_conjecture)
cons(sk$_9$, nil) = sk$_3$ or nil = sk$_3$ cnf(co1$_{17}$, negated_conjecture)
memberP(sk$_4$, sk$_9$) or nil = sk$_3$ cnf(co1$_{18}$, negated_conjecture)

SWC170+1.p cond_pst_diff_adj1_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\forall y$: (ssItem
$\forall z$: (ssItem(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ (app(app(app(x_1, cons(y, nil)), cons(z, nil)), x_2) $\neq$ u or neq(y, z)))))) or ($\neg$ singletonP(w) and neq(x, nil))))))) fof(co$_1$, conjecture)

SWC170-1.p cond_pst_diff_adj1_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
segmentP(sk$_4$, sk$_3$) cnf(co1$_7$, negated_conjecture)
ssItem(sk$_5$) cnf(co1$_8$, negated_conjecture)
ssItem(sk$_6$) cnf(co1$_9$, negated_conjecture)
ssList(sk$_7$) cnf(co1$_{10}$, negated_conjecture)
ssList(sk$_8$) cnf(co1$_{11}$, negated_conjecture)
app(app(app(sk$_7$, cons(sk$_5$, nil)), cons(sk$_6$, nil)), sk$_8$) = sk$_1$ cnf(co1$_{12}$, negated_conjecture)
$\neg$ neq(sk$_5$, sk$_6$) cnf(co1$_{13}$, negated_conjecture)
neq(sk$_4$, nil) $\Rightarrow$ singletonP(sk$_3$) cnf(co1$_{14}$, negated_conjecture)

SWC171+1.p cond_pst_diff_adj2_x_maximal

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: ($\neg$ ssItem(z) or $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ app(app(app(x_1, cons(y, nil)), cons(z, nil)), x_2) $\neq$ u)) or neq(y, z))) or ($\forall x_3$: ($\neg$ ssItem(x_3) or cons(x_3, nil) $\neq$ w or $\neg$ memberP(x, x_3) or $\exists x_4$: (ssItem(x_4) and $x_3 \neq x_4$ and memberP(x, x_4) and $x_3 \leq x_4$)) and (nil $\neq x$ or nil $\neq w$)))))) fof(co_1, conjecture)

SWC171-1.p cond_pst_diff_adj2_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssItem(sk_5) cnf(co1_7, negated_conjecture)
ssItem(sk_6) cnf(co1_8, negated_conjecture)
ssList(sk_7) cnf(co1_9, negated_conjecture)
ssList(sk_8) cnf(co1_{10}, negated_conjecture)
app(app(app(sk_7, cons(sk_5, nil)), cons(sk_6, nil)), sk_8) = sk_1 cnf(co1_{11}, negated_conjecture)
$\neg$ neq(sk_5, sk_6) cnf(co1_{12}, negated_conjecture)
ssItem(sk_9) or nil = sk_4 cnf(co1_{13}, negated_conjecture)
ssItem(sk_9) or nil = sk_3 cnf(co1_{14}, negated_conjecture)
cons(sk_9, nil) = sk_3 or nil = sk_4 cnf(co1_{15}, negated_conjecture)
memberP(sk_4, sk_9) or nil = sk_4 cnf(co1_{16}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\text{sk}_9 \leq a$) $\Rightarrow$ ($\text{sk}_9 = a$ or nil = sk_4) cnf(co1_{17}, negated_conjecture)
cons(sk_9, nil) = sk_3 or nil = sk_3 cnf(co1_{18}, negated_conjecture)
memberP(sk_4, sk_9) or nil = sk_3 cnf(co1_{19}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\text{sk}_9 \leq a$) $\Rightarrow$ ($\text{sk}_9 = a$ or nil = sk_3) cnf(co1_{20}, negated_conjecture)

SWC172+1.p cond_pst_diff_adj2_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: ($\neg$ ssItem(z) or $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ app(app(app(x_1, cons(y, nil)), cons(z, nil)), x_2) $\neq$ u)) or neq(y, z))) or ($\forall x_3$: ($\neg$ ssItem(x_3) or cons(x_3, nil) $\neq$ w or $\neg$ memberP(x, x_3) or $\exists x_4$: (ssItem(x_4) and $x_3 \neq x_4$ and memberP(x, x_4) and $x_4 \leq x_3$)) and (nil $\neq x$ or nil $\neq w$)))))) fof(co_1, conjecture)

SWC172-1.p cond_pst_diff_adj2_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssItem(sk_5) cnf(co1_7, negated_conjecture)
ssItem(sk_6) cnf(co1_8, negated_conjecture)
ssList(sk_7) cnf(co1_9, negated_conjecture)
ssList(sk_8) cnf(co1_{10}, negated_conjecture)
app(app(app(sk_7, cons(sk_5, nil)), cons(sk_6, nil)), sk_8) = sk_1 cnf(co1_{11}, negated_conjecture)

$\neg\,\mathrm{neq}(\mathrm{sk}_5, \mathrm{sk}_6)$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
$\mathrm{ssItem}(\mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
$\mathrm{ssItem}(\mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{14}$, negated_conjecture)
$\mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{15}$, negated_conjecture)
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{16}$, negated_conjecture)
($\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_9$) $\Rightarrow$ ($\mathrm{sk}_9 = a$ or $\mathrm{nil} = \mathrm{sk}_4$) cnf($\mathrm{co1}_{17}$, negated_conjecture)
$\mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{18}$, negated_conjecture)
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{19}$, negated_conjecture)
($\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_9$) $\Rightarrow$ ($\mathrm{sk}_9 = a$ or $\mathrm{nil} = \mathrm{sk}_3$) cnf($\mathrm{co1}_{20}$, negated_conjecture)

SWC173+1.p cond_pst_diff_adj2_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u)$ $\Rightarrow$ $\forall v$: ($\mathrm{ssList}(v)$ $\Rightarrow$ $\forall w$: ($\mathrm{ssList}(w)$ $\Rightarrow$ $\forall x$: ($\mathrm{ssList}(x)$ $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: ($\mathrm{ssItem}(y)$ $\Rightarrow$ $\forall z$: ($\mathrm{ssItem}(z)$ $\Rightarrow$ ($\forall x_1$: ($\mathrm{ssList}(x_1)$ $\Rightarrow$ $\forall x_2$: ($\mathrm{ssList}(x_2)$ $\Rightarrow$ $\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), \mathrm{cons}(z, \mathrm{nil})), x_2) \neq u$)) or $\mathrm{neq}(y, z)$)))) or ($\forall x_3$: ($\mathrm{ssItem}(x_3)$ $\Rightarrow$ $\forall x_4$: ($\mathrm{ssList}(x_4)$ $\Rightarrow$ $\forall x_5$: ($\mathrm{ssList}(x_5)$ $\Rightarrow$ ($\mathrm{cons}(x_3, \mathrm{nil}) \neq w$ or $\mathrm{app}(\mathrm{app}(x_4, w), x_5)$ x or $\exists x_6$: ($\mathrm{ssItem}(x_6)$ and $\mathrm{memberP}(x_4, x_6)$ and $\mathrm{lt}(x_3, x_6)$) or $\exists x_7$: ($\mathrm{ssItem}(x_7)$ and $\mathrm{memberP}(x_5, x_7)$ and $\mathrm{lt}(x_7, x_3)$)))))) and x or $\mathrm{nil} \neq w$))))))) fof(co_1, conjecture)

SWC173-1.p cond_pst_diff_adj2_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_1$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_2)$ cnf($\mathrm{co1}_2$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_3)$ cnf($\mathrm{co1}_3$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_4)$ cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
$\mathrm{ssItem}(\mathrm{sk}_5)$ cnf($\mathrm{co1}_7$, negated_conjecture)
$\mathrm{ssItem}(\mathrm{sk}_6)$ cnf($\mathrm{co1}_8$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_7)$ cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_8)$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ cnf($\mathrm{co1}_{11}$, negated_conjecture)
$\neg\,\mathrm{neq}(\mathrm{sk}_5, \mathrm{sk}_6)$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
$\mathrm{ssItem}(\mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
$\mathrm{ssItem}(\mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{14}$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_{10})$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{15}$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_{11})$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{16}$, negated_conjecture)
$\mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{17}$, negated_conjecture)
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_{10}, \mathrm{sk}_3), \mathrm{sk}_{11}) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{18}$, negated_conjecture)
($\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_{10}, a)$ and $\mathrm{lt}(\mathrm{sk}_9, a)$) $\Rightarrow$ $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{19}$, negated_conjecture)
($\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_{11}, a)$ and $\mathrm{lt}(a, \mathrm{sk}_9)$) $\Rightarrow$ $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{20}$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_{10})$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{21}$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_{11})$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{22}$, negated_conjecture)
$\mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{23}$, negated_conjecture)
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_{10}, \mathrm{sk}_3), \mathrm{sk}_{11}) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{24}$, negated_conjecture)
($\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_{10}, a)$ and $\mathrm{lt}(\mathrm{sk}_9, a)$) $\Rightarrow$ $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{25}$, negated_conjecture)
($\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_{11}, a)$ and $\mathrm{lt}(a, \mathrm{sk}_9)$) $\Rightarrow$ $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{26}$, negated_conjecture)

SWC174+1.p cond_pst_diff_adj2_x_pst_singleton
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u)$ $\Rightarrow$ $\forall v$: ($\mathrm{ssList}(v)$ $\Rightarrow$ $\forall w$: ($\mathrm{ssList}(w)$ $\Rightarrow$ $\forall x$: ($\mathrm{ssList}(x)$ $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\,\mathrm{singletonP}(w)$ or $\forall y$: ($\mathrm{ssItem}($
$\forall z$: ($\mathrm{ssItem}(z)$ $\Rightarrow$ ($\forall x_1$: ($\mathrm{ssList}(x_1)$ $\Rightarrow$ $\forall x_2$: ($\mathrm{ssList}(x_2)$ $\Rightarrow$ $\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), \mathrm{cons}(z, \mathrm{nil})), x_2) \neq u$)) or $\mathrm{neq}(y, z)$))))))))) fof(co_1, conjecture)

SWC174-1.p cond_pst_diff_adj2_x_pst_singleton
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{singletonP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_5, \mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC175+1.p cond_pst_diff_adj2_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$
$(\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssItem}(x$
w and $\mathrm{lt}(x_2, z)))))))$ or $\forall x_4$: $(\mathrm{ssItem}(x_4) \Rightarrow \forall x_5$: $(\mathrm{ssItem}(x_5) \Rightarrow (\forall x_6$: $(\mathrm{ssList}(x_6) \Rightarrow \forall x_7$: $(\mathrm{ssList}(x_7) \Rightarrow$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(x_6, \mathrm{cons}(x_4, \mathrm{nil})), \mathrm{cons}(x_5, \mathrm{nil})), x_7) \neq u))$ or $\mathrm{neq}(x_4, x_5))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC175-1.p cond_pst_diff_adj2_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, \mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_8, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_7, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_6, \mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

SWC176+1.p cond_pst_diff_adj2_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$
$\forall z$: $(\neg\, \mathrm{ssList}(z)$ or $\mathrm{app}(\mathrm{app}(y, w), z) \neq x$ or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists x_1$: $(\mathrm{ssItem}(x_1)$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$ and $\mathrm{app}(x_2, \mathrm{cons}(x_1$
y and $\exists x_3$: $(\mathrm{ssItem}(x_3)$ and $\exists x_4$: $(\mathrm{ssList}(x_4)$ and $\mathrm{app}(\mathrm{cons}(x_3, \mathrm{nil}), x_4) = w$ and $\mathrm{lt}(x_1, x_3)))))$ or $\exists x_5$: $(\mathrm{ssItem}(x_5)$ and $\exists x_6$: $(\mathrm{ss}$

z and $\exists x_7$: (ssItem(x_7) and $\exists x_8$: (ssList(x_8) and app(x_8, cons(x_7, nil)) = w and lt(x_7, x_5))))))) or $\forall x_9$: (ssItem(x_9) $\Rightarrow$ $\forall x_{10}$: ($\neg$ ssItem(x_{10}) or $\forall x_{11}$: (ssList(x_{11}) $\Rightarrow$ $\forall x_{12}$: (ssList(x_{12}) $\Rightarrow$ app(app(app(x_{11}, cons(x_9, nil)), cons(x_{10}, nil)), x_{12}) $\neq$ u)) or neq(x_9, x_{10}))) or (nil $\neq$ x and nil = w))))) fof(co_1, conjecture)

SWC176-1.p cond_pst_diff_adj2_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
ssList(sk_5) cnf($co1_7$, negated_conjecture)
ssList(sk_6) cnf($co1_8$, negated_conjecture)
app(app(sk_5, sk_3), sk_6) = sk_4 cnf($co1_9$, negated_conjecture)
strictorderedP(sk_3) cnf($co1_{10}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk_5 and ssItem(c) and ssList(d) and app(cons(c, nil), d) = sk_3) $\Rightarrow$ $\neg$ lt(a, c) cnf($co1_{11}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_6 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$ $\neg$ lt(c, a) cnf($co1_{12}$, negated_conjecture)
ssItem(sk_7) cnf($co1_{13}$, negated_conjecture)
ssItem(sk_8) cnf($co1_{14}$, negated_conjecture)
ssList(sk_9) cnf($co1_{15}$, negated_conjecture)
ssList(sk_{10}) cnf($co1_{16}$, negated_conjecture)
app(app(app(sk_9, cons(sk_7, nil)), cons(sk_8, nil)), sk_{10}) = sk_1 cnf($co1_{17}$, negated_conjecture)
$\neg$ neq(sk_7, sk_8) cnf($co1_{18}$, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($co1_{19}$, negated_conjecture)

SWC177+1.p cond_pst_diff_adj2_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: ($\neg$ ssItem(z) or $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ app(app(app(x_1, cons(y, nil)), cons(z, nil)), x_2) $\neq$ u)) or neq(y, z))) or ($\forall x_3$: ($\neg$ ssItem(x_3) or cons(x_3, nil) $\neq$ w or $\neg$ memberP(x, x_3)) and (nil $\neq$ x or nil $\neq$ w)))))) fof(co_1, c

SWC177-1.p cond_pst_diff_adj2_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
ssItem(sk_5) cnf($co1_7$, negated_conjecture)
ssItem(sk_6) cnf($co1_8$, negated_conjecture)
ssList(sk_7) cnf($co1_9$, negated_conjecture)
ssList(sk_8) cnf($co1_{10}$, negated_conjecture)
app(app(app(sk_7, cons(sk_5, nil)), cons(sk_6, nil)), sk_8) = sk_1 cnf($co1_{11}$, negated_conjecture)
$\neg$ neq(sk_5, sk_6) cnf($co1_{12}$, negated_conjecture)
ssItem(sk_9) or nil = sk_4 cnf($co1_{13}$, negated_conjecture)
ssItem(sk_9) or nil = sk_3 cnf($co1_{14}$, negated_conjecture)
cons(sk_9, nil) = sk_3 or nil = sk_4 cnf($co1_{15}$, negated_conjecture)
memberP(sk_4, sk_9) or nil = sk_4 cnf($co1_{16}$, negated_conjecture)

$\mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC178+1.p cond_pst_diff_adj2_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{segmentP}(x, w)$ or $\forall y$: (ssItem
$\forall z$: $(\mathrm{ssItem}(z) \Rightarrow (\forall x_1$: $(\mathrm{ssList}(x_1) \Rightarrow \forall x_2$: $(\mathrm{ssList}(x_2) \Rightarrow \mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), \mathrm{cons}(z, \mathrm{nil})), x_2) \neq$
$u))$ or $\mathrm{neq}(y, z))))$ or $(\neg\, \mathrm{singletonP}(w)$ and $\mathrm{neq}(x, \mathrm{nil})))))))$ $\quad \mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC178-1.p cond_pst_diff_adj2_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\quad \mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\quad \mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\quad \mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\quad \mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\quad \mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\quad \mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\quad \mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\quad \mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\quad \mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ $\quad \mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_5, \mathrm{sk}_6)$ $\quad \mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{singletonP}(\mathrm{sk}_3)$ $\quad \mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC179+1.p cond_pst_different2_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\mathrm{duplicatefreeP}(u)$ or $(\forall y$: (ssIter
$\forall z$: $(\mathrm{ssList}(z) \Rightarrow \forall x_1$: $(\mathrm{ssList}(x_1) \Rightarrow (\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\mathrm{app}(\mathrm{app}(z, w), x_1) \neq x$ or $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $\mathrm{memberP}(z, x_2)$ an
x or $\mathrm{nil} \neq w)))))))$ $\quad \mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC179-1.p cond_pst_different2_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\quad \mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\quad \mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\quad \mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\quad \mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{duplicatefreeP}(\mathrm{sk}_1)$ $\quad \mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_6, a)$ and $\mathrm{lt}(\mathrm{sk}_5, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{lt}(a, \mathrm{sk}_5)) \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_6, a)$ and $\mathrm{lt}(\mathrm{sk}_5, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{lt}(a, \mathrm{sk}_5)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$

SWC180+1.p cond_pst_different2_x_pst_strict_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z$
w and $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $((\neg\, \mathrm{lt}(y, x_2)$ and $\mathrm{memberP}(x_1, x_2))$ or $(\neg\, \mathrm{lt}(x_2, y)$ and $\mathrm{memberP}(z, x_2)))))))$ or $\mathrm{duplicatefreeP}(u$

SWC180-1.p cond_pst_different2_x_pst_strict_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\quad \mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\quad \mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\quad \mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\quad \mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_3$ and $\mathrm{ssItem}(d)$ and $\mathrm{memberP}(c, d)) \Rightarrow$
$\mathrm{lt}(a, d)$ $\quad \mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_3$ and $\mathrm{ssItem}(d)$ and $\mathrm{memberP}(b, d)) \Rightarrow$
$\mathrm{lt}(d, a)$ $\quad \mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{duplicatefreeP}(\mathrm{sk}_1)$ $\quad \mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC181+1.p cond_pst_different2_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$
$\forall z$: $(\mathrm{ssList}(z) \Rightarrow (\mathrm{app}(\mathrm{app}(y, w), z) \neq x$ or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists x_1$: $(\mathrm{ssItem}(x_1)$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$ and $\mathrm{app}(x_2, \mathrm{cons}(x_1$
y and $\exists x_3$: $(\mathrm{ssItem}(x_3)$ and $\exists x_4$: $(\mathrm{ssList}(x_4)$ and $\mathrm{app}(\mathrm{cons}(x_3, \mathrm{nil}), x_4) = w$ and $\mathrm{lt}(x_1, x_3)))))$ or $\exists x_5$: $(\mathrm{ssItem}(x_5)$ and $\exists x_6$: $(\mathrm{ss}$
z and $\exists x_7$: $(\mathrm{ssItem}(x_7)$ and $\exists x_8$: $(\mathrm{ssList}(x_8)$ and $\mathrm{app}(x_8, \mathrm{cons}(x_7, \mathrm{nil})) = w$ and $\mathrm{lt}(x_7, x_5)))))))))$ or $\mathrm{duplicatefreeP}(u)$ or $(\mathrm{nil} \neq$
x and $\mathrm{nil} = w))))))$ $\quad \mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC181-1.p cond_pst_different2_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\quad \mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\quad \mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\quad \mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\quad \mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\quad \mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\quad \mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\quad \mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_3), \mathrm{sk}_6) = \mathrm{sk}_4$ $\quad \mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\quad \mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{cons}(c, \mathrm{nil}), d) = \mathrm{sk}_3) \Rightarrow$
$\neg\, \mathrm{lt}(a, c)$ $\quad \mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_6 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) ⇒ ¬ lt(c, a) cnf($\mathrm{co1}_{12}$, negated_conjecture)
¬ duplicatefreeP(sk_1) cnf($\mathrm{co1}_{13}$, negated_conjecture)
nil = sk_3 ⇒ nil = sk_4 cnf($\mathrm{co1}_{14}$, negated_conjecture)

SWC182+1.p cond_pst_different3_x_initialize
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
∀u: (ssList(u) ⇒ ∀v: (ssList(v) ⇒ ∀w: (ssList(w) ⇒ ∀x: (ssList(x) ⇒ (nil ≠ w or v ≠ x or u ≠ w or ∀y: (ssItem(y) ⇒ ∀z: (ssList(z) ⇒ ∀x_1: (ssList(x_1) ⇒ (app(app(z, cons(y, nil)), x_1) ≠ u or (¬ memberP(z, y) and ¬ m

SWC182-1.p cond_pst_different3_x_initialize
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
nil = sk_3 cnf($\mathrm{co1}_5$, negated_conjecture)
sk_2 = sk_4 cnf($\mathrm{co1}_6$, negated_conjecture)
sk_1 = sk_3 cnf($\mathrm{co1}_7$, negated_conjecture)
ssItem(sk_5) cnf($\mathrm{co1}_8$, negated_conjecture)
ssList(sk_6) cnf($\mathrm{co1}_9$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_{10}$, negated_conjecture)
app(app(sk_6, cons(sk_5, nil)), sk_7) = sk_1 cnf($\mathrm{co1}_{11}$, negated_conjecture)
memberP(sk_6, sk_5) or memberP(sk_7, sk_5) cnf($\mathrm{co1}_{12}$, negated_conjecture)

SWC183+1.p cond_pst_different3_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
∀u: (ssList(u) ⇒ ∀v: (ssList(v) ⇒ ∀w: (ssList(w) ⇒ ∀x: (¬ ssList(x) or v ≠ x or u ≠ w or ∀y: (ssItem(y) ⇒ ∀z: (ssList(z) ⇒ ∀x_1: (¬ ssList(x_1) or app(app(z, cons(y, nil)), x_1) ≠ u or (¬ memberP(z, y) and ¬ memberP(x_1, y))))) or (∀
w or ¬ memberP(x, x_2) or ∃x_3: (ssItem(x_3) and x_2 ≠ x_3 and memberP(x, x_3) and x_2 ≤ x_3)) and (nil ≠ x or nil ≠ w)))))) fof(co_1, conjecture)

SWC183-1.p cond_pst_different3_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
sk_2 = sk_4 cnf($\mathrm{co1}_5$, negated_conjecture)
sk_1 = sk_3 cnf($\mathrm{co1}_6$, negated_conjecture)
ssItem(sk_5) cnf($\mathrm{co1}_7$, negated_conjecture)
ssList(sk_6) cnf($\mathrm{co1}_8$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_9$, negated_conjecture)
app(app(sk_6, cons(sk_5, nil)), sk_7) = sk_1 cnf($\mathrm{co1}_{10}$, negated_conjecture)
memberP(sk_6, sk_5) or memberP(sk_7, sk_5) cnf($\mathrm{co1}_{11}$, negated_conjecture)
ssItem(sk_8) or nil = sk_4 cnf($\mathrm{co1}_{12}$, negated_conjecture)
ssItem(sk_8) or nil = sk_3 cnf($\mathrm{co1}_{13}$, negated_conjecture)
cons(sk_8, nil) = sk_3 or nil = sk_4 cnf($\mathrm{co1}_{14}$, negated_conjecture)
memberP(sk_4, sk_8) or nil = sk_4 cnf($\mathrm{co1}_{15}$, negated_conjecture)

(ssItem(a) and memberP(sk_4, a) and $\mathrm{sk}_8 \leq a$) $\Rightarrow$ ($\mathrm{sk}_8 = a$ or $\mathrm{nil} = \mathrm{sk}_4$) cnf($\mathrm{co1}_{16}$, negated_conjecture)
cons(sk_8, nil) $= \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{17}$, negated_conjecture)
memberP($\mathrm{sk}_4, \mathrm{sk}_8$) or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{18}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\mathrm{sk}_8 \leq a$) $\Rightarrow$ ($\mathrm{sk}_8 = a$ or $\mathrm{nil} = \mathrm{sk}_3$) cnf($\mathrm{co1}_{19}$, negated_conjecture)

SWC184+1.p cond_pst_different3_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: (ssList(z) $\Rightarrow$ $\forall x_1$: ($\neg$ ssList(x_1) or app(app(z, cons(y, nil)), x_1) $\neq u$ or ($\neg$ memberP(z, y) and $\neg$ memberP(x_1, y))))) or ($\forall$ w or $\neg$ memberP(x, x_2) or $\exists x_3$: (ssItem(x_3) and $x_2 \neq x_3$ and memberP(x, x_3) and $x_3 \leq x_2$)) and (nil $\neq x$ or nil $\neq w$)))))) fof(co_1, conjecture)

SWC184-1.p cond_pst_different3_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
ssItem(sk_5) cnf($\mathrm{co1}_7$, negated_conjecture)
ssList(sk_6) cnf($\mathrm{co1}_8$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_9$, negated_conjecture)
app(app(sk_6, cons(sk_5, nil)), sk_7) $= \mathrm{sk}_1$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
memberP($\mathrm{sk}_6, \mathrm{sk}_5$) or memberP($\mathrm{sk}_7, \mathrm{sk}_5$) cnf($\mathrm{co1}_{11}$, negated_conjecture)
ssItem(sk_8) or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
ssItem(sk_8) or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
cons(sk_8, nil) $= \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{14}$, negated_conjecture)
memberP($\mathrm{sk}_4, \mathrm{sk}_8$) or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{15}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $a \leq \mathrm{sk}_8$) $\Rightarrow$ ($\mathrm{sk}_8 = a$ or $\mathrm{nil} = \mathrm{sk}_4$) cnf($\mathrm{co1}_{16}$, negated_conjecture)
cons(sk_8, nil) $= \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{17}$, negated_conjecture)
memberP($\mathrm{sk}_4, \mathrm{sk}_8$) or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{18}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $a \leq \mathrm{sk}_8$) $\Rightarrow$ ($\mathrm{sk}_8 = a$ or $\mathrm{nil} = \mathrm{sk}_3$) cnf($\mathrm{co1}_{19}$, negated_conjecture)

SWC185+1.p cond_pst_different3_x_pst_different3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z w and (memberP(z, y) or memberP(x_1, y))))) or $\forall x_2$: (ssItem(x_2) $\Rightarrow$ $\forall x_3$: (ssList(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $\Rightarrow$ (app(app(x_3, cons(x_2, nil)), x_4) $\neq u$ or ($\neg$ memberP(x_3, x_2) and $\neg$ memberP(x_4, x_2)))))))))) fof(co_1, conjecture)

SWC185-1.p cond_pst_different3_x_pst_different3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) $= \mathrm{sk}_3$) $\Rightarrow$ $\neg$ memberP(b, a) cnf($\mathrm{co1}_7$, negated_conje

(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_3) $\Rightarrow$ $\neg$ memberP(c, a) cnf($\mathrm{co1}_8$, negated_conje
ssItem(sk_5) cnf($\mathrm{co1}_9$, negated_conjecture)
ssList(sk_6) cnf($\mathrm{co1}_{10}$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_{11}$, negated_conjecture)
app(app(sk_6, cons(sk_5, nil)), sk_7) = sk_1 cnf($\mathrm{co1}_{12}$, negated_conjecture)
memberP(sk_6, sk_5) or memberP(sk_7, sk_5) cnf($\mathrm{co1}_{13}$, negated_conjecture)

SWC186+1.p cond_pst_different3_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ frontsegP(x, w) or $\neg$ strictorde
$\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ (app(app(x_1, cons(z, nil)), x_2) $\neq u$ or ($\neg$ memberP(x_1, z) and $\neg$ memberP(x_2, z)))))))

SWC186-1.p cond_pst_different3_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
frontsegP(sk_4, sk_3) cnf($\mathrm{co1}_7$, negated_conjecture)
strictorderedP(sk_3) cnf($\mathrm{co1}_8$, negated_conjecture)
(ssList(a) and neq(sk_3, a) and frontsegP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ strictorderedP(a) cnf($\mathrm{co1}_9$, negated_conjectu
ssItem(sk_5) cnf($\mathrm{co1}_{10}$, negated_conjecture)
ssList(sk_6) cnf($\mathrm{co1}_{11}$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_{12}$, negated_conjecture)
app(app(sk_6, cons(sk_5, nil)), sk_7) = sk_1 cnf($\mathrm{co1}_{13}$, negated_conjecture)
memberP(sk_6, sk_5) or memberP(sk_7, sk_5) cnf($\mathrm{co1}_{14}$, negated_conjecture)

SWC187+1.p cond_pst_different3_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$
$\forall z$: (ssList(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ (app(app(z, cons(y, nil)), x_1) $\neq u$ or ($\neg$ memberP(z, y) and $\neg$ memberP(x_1, y)))))) or ($\forall$
(cons(x_2, nil) $\neq w$ or $\neg$ memberP(x, x_2))) and (nil $\neq x$ or nil $\neq w$)))))))) fof(co_1, conjecture)

SWC187-1.p cond_pst_different3_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
ssItem(sk_5) cnf($\mathrm{co1}_7$, negated_conjecture)
ssList(sk_6) cnf($\mathrm{co1}_8$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_9$, negated_conjecture)
app(app(sk_6, cons(sk_5, nil)), sk_7) = sk_1 cnf($\mathrm{co1}_{10}$, negated_conjecture)
memberP(sk_6, sk_5) or memberP(sk_7, sk_5) cnf($\mathrm{co1}_{11}$, negated_conjecture)
ssItem(sk_8) or nil = sk_4 cnf($\mathrm{co1}_{12}$, negated_conjecture)

$\mathrm{ssItem}(\mathrm{sk}_8)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_8, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_8)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_8, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_8)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

SWC188+1.p cond_pst_equal1_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow \forall z$: $(\mathrm{ssItem}(z) \Rightarrow \forall x_1$: $(\mathrm{ssList}(x_1) \Rightarrow \forall x_2$: $(\mathrm{ssList}(x_2) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), \mathrm{cons}(z, \mathrm{nil})), x_2) \neq u$ or $y = z)))))$ or $(\forall x_3$: $(\mathrm{ssItem}(x_3) \Rightarrow (\mathrm{cons}(x_3, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, x_3)$ or $\exists x_4$: $(\mathrm{ssItem}(x_4)$ and $x_3 \neq x_4$ and $\mathrm{memberP}(x, x_4)$ and $x_4 \leq x_3)))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC188-1.p cond_pst_equal1_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \neq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_9) \Rightarrow (\mathrm{sk}_9 = a$ or $\mathrm{nil} = \mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_9)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_9) \Rightarrow (\mathrm{sk}_9 = a$ or $\mathrm{nil} = \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$

SWC189+1.p cond_pst_equal1_x_pst_equal1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssItem}(z$
z and $\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), \mathrm{cons}(z, \mathrm{nil})), x_2) = w))))$ or $\forall x_3$: $(\mathrm{ssItem}(x_3) \Rightarrow \forall x_4$: $(\mathrm{ssItem}(x_4) \Rightarrow \forall x_5$: $(\mathrm{ssList}(x_5) \Rightarrow$
$\forall x_6$: $(\mathrm{ssList}(x_6) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(x_5, \mathrm{cons}(x_3, \mathrm{nil})), \mathrm{cons}(x_4, \mathrm{nil})), x_6) \neq u$ or $x_3 = x_4)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC189-1.p cond_pst_equal1_x_pst_equal1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$

$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{app}(\mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})), \mathrm{cons}(b, \mathrm{nil})), d) = \mathrm{sk}_3) \Rightarrow a = b$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \neq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC190+1.p cond_pst_equal1_x_pst_equal3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow \forall z$: $(\mathrm{ssItem}(z) \Rightarrow \forall x_1$: $(\mathrm{ssList}(x_1) \Rightarrow \forall x_2$: $(\neg\, \mathrm{ssList}(x_2)$ or $\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), \mathrm{cons}(z, \mathrm{nil})), x_2) \neq u$ or $y = z))))$ or $\forall x_3$: $(\mathrm{ssItem}(x_3) \Rightarrow \exists x_4$: $(\mathrm{ssItem}(x_4)$ and $x_3 \neq x_4$ and $\mathrm{memberP}(w, x_4)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC190-1.p cond_pst_equal1_x_pst_equal3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \neq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_3, a)) \Rightarrow \mathrm{sk}_9 = a$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC191+1.p cond_pst_equal1_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{frontsegP}(x, w)$ or $\neg$ equalelen
$\forall x_1$: $(\mathrm{ssItem}(x_1) \Rightarrow \forall x_2$: $(\mathrm{ssList}(x_2) \Rightarrow \forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(x_2, \mathrm{cons}(z, \mathrm{nil})), \mathrm{cons}(x_1, \mathrm{nil})), x_3) \neq u$ or $z = x_1))))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC191-1.p cond_pst_equal1_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

(ssList(a) and neq(sk_3, a) and frontsegP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ equalelemsP(a) cnf($\mathrm{co1}_9$, negated_conjecture
ssItem(sk_5) cnf($\mathrm{co1}_{10}$, negated_conjecture)
ssItem(sk_6) cnf($\mathrm{co1}_{11}$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_{12}$, negated_conjecture)
ssList(sk_8) cnf($\mathrm{co1}_{13}$, negated_conjecture)
app(app(app(sk_7, cons(sk_5, nil)), cons(sk_6, nil)), sk_8) = sk_1 cnf($\mathrm{co1}_{14}$, negated_conjecture)
$\mathrm{sk}_5 \neq \mathrm{sk}_6$ cnf($\mathrm{co1}_{15}$, negated_conjecture)

SWC192+1.p cond_pst_equal1_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: (ssItem(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ (app(app(app(x_1, cons(y, nil)), cons(z, nil)), x_2) $\neq$ u or $y = z$))))) or ($\forall x_3$: (ssItem(x_3) $\Rightarrow$ (cons(x_3, nil) $\neq w$ or $\neg$ memberP(x, x_3))) and (nil $\neq x$ or nil $\neq w$)))))))) fof(co_1, c

SWC192-1.p cond_pst_equal1_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
ssItem(sk_5) cnf($\mathrm{co1}_7$, negated_conjecture)
ssItem(sk_6) cnf($\mathrm{co1}_8$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_9$, negated_conjecture)
ssList(sk_8) cnf($\mathrm{co1}_{10}$, negated_conjecture)
app(app(app(sk_7, cons(sk_5, nil)), cons(sk_6, nil)), sk_8) = sk_1 cnf($\mathrm{co1}_{11}$, negated_conjecture)
$\mathrm{sk}_5 \neq \mathrm{sk}_6$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
ssItem(sk_9) or nil = sk_4 cnf($\mathrm{co1}_{13}$, negated_conjecture)
ssItem(sk_9) or nil = sk_3 cnf($\mathrm{co1}_{14}$, negated_conjecture)
cons(sk_9, nil) = sk_3 or nil = sk_4 cnf($\mathrm{co1}_{15}$, negated_conjecture)
memberP($\mathrm{sk}_4, \mathrm{sk}_9$) or nil = sk_4 cnf($\mathrm{co1}_{16}$, negated_conjecture)
cons(sk_9, nil) = sk_3 or nil = sk_3 cnf($\mathrm{co1}_{17}$, negated_conjecture)
memberP($\mathrm{sk}_4, \mathrm{sk}_9$) or nil = sk_3 cnf($\mathrm{co1}_{18}$, negated_conjecture)

SWC193+1.p cond_pst_equal1_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\forall y$: (ssItem
$\forall z$: (ssItem(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ (app(app(app(x_1, cons(y, nil)), cons(z, nil)), x_2) $\neq$ u or $y = z$))))) or ($\neg$ singletonP(w) and neq(x, nil)))))))) fof(co_1, conjecture)

SWC193-1.p cond_pst_equal1_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)

$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \neq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{singletonP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC194+1.p cond_pst_equal2_x_pst_equal1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssItem}(z$ and $\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), \mathrm{cons}(z, \mathrm{nil})), x_2) = w))))$ or $\forall x_3$: $(\mathrm{ssItem}(x_3) \Rightarrow \forall x_4$: $(\mathrm{ssItem}(x_4) \Rightarrow \forall x_5$: $(\mathrm{ssList}(x_5) \Rightarrow \forall x_6$: $(\mathrm{ssList}(x_6) \Rightarrow \forall x_7$: $(\mathrm{ssList}(x_7) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_5, \mathrm{cons}(x_3, \mathrm{nil})), x_7), \mathrm{cons}(x_4, \mathrm{nil})), x_6) \neq u$ or $x_3 = x_4))))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC194-1.p cond_pst_equal2_x_pst_equal1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{app}(\mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})), \mathrm{cons}(b, \mathrm{nil})), d) = \mathrm{sk}_3) \Rightarrow a = b$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_9), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \neq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC195+1.p cond_pst_equal2_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{frontsegP}(x, w)$ or $\neg\, \mathrm{equalelem}$
$\forall x_1$: $(\mathrm{ssItem}(x_1) \Rightarrow \forall x_2$: $(\mathrm{ssList}(x_2) \Rightarrow \forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow \forall x_4$: $(\mathrm{ssList}(x_4) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_2, \mathrm{cons}(z, \mathrm{nil})), x_4), \mathrm{con}$
u or $z = x_1))))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC195-1.p cond_pst_equal2_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$

equalelemsP(sk_3) cnf($co1_8$, negated_conjecture)
(ssList(a) and neq(sk_3, a) and frontsegP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ equalelemsP(a) cnf($co1_9$, negated_conjecture
ssItem(sk_5) cnf($co1_{10}$, negated_conjecture)
ssItem(sk_6) cnf($co1_{11}$, negated_conjecture)
ssList(sk_7) cnf($co1_{12}$, negated_conjecture)
ssList(sk_8) cnf($co1_{13}$, negated_conjecture)
ssList(sk_9) cnf($co1_{14}$, negated_conjecture)
app(app(app(app(sk_7, cons(sk_5, nil)), sk_9), cons(sk_6, nil)), sk_8) = sk_1 cnf($co1_{15}$, negated_conjecture)
$sk_5 \neq sk_6$ cnf($co1_{16}$, negated_conjecture)

SWC196+1.p cond_pst_equal2_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ (app(w, y) $\neq x$ or $\neg$ equalelemsP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) = y and $\exists x_2$: (ssList(x_2) w))))) or $\forall x_3$: (ssItem(x_3) $\Rightarrow$ $\forall x_4$: (ssItem(x_4) $\Rightarrow$ $\forall x_5$: (ssList(x_5) $\Rightarrow$ $\forall x_6$: (ssList(x_6) $\Rightarrow$ $\forall x_7$: (ssList(x_7) $\Rightarrow$ (app(app(app(app(x_5, cons(x_3, nil)), x_7), cons(x_4, nil)), x_6) $\neq u$ or $x_3 = x_4$)))))) or (nil $\neq x$ and nil = w)))))) fof(co_1, conj

SWC196-1.p cond_pst_equal2_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
ssList(sk_5) cnf($co1_7$, negated_conjecture)
app(sk_3, sk_5) = sk_4 cnf($co1_8$, negated_conjecture)
equalelemsP(sk_3) cnf($co1_9$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_5 and ssList(c)) $\Rightarrow$ app(c, cons(a, nil)) $\neq sk_3$ cnf($co1_{10}$, negated_con
ssItem(sk_6) cnf($co1_{11}$, negated_conjecture)
ssItem(sk_7) cnf($co1_{12}$, negated_conjecture)
ssList(sk_8) cnf($co1_{13}$, negated_conjecture)
ssList(sk_9) cnf($co1_{14}$, negated_conjecture)
ssList(sk_{10}) cnf($co1_{15}$, negated_conjecture)
app(app(app(app(sk_8, cons(sk_6, nil)), sk_{10}), cons(sk_7, nil)), sk_9) = sk_1 cnf($co1_{16}$, negated_conjecture)
$sk_6 \neq sk_7$ cnf($co1_{17}$, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($co1_{18}$, negated_conjecture)

SWC197+1.p cond_pst_equal2_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\forall y$: (ssItem
$\forall z$: (ssItem(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ $\forall x_3$: (ssList(x_3) $\Rightarrow$ (app(app(app(app(x_1, cons(y, nil)), x_3), cons(
u or $y = z$)))))) or ($\neg$ singletonP(w) and neq(x, nil))))))) fof(co_1, conjecture)

SWC197-1.p cond_pst_equal2_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_9), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \neq \mathrm{sk}_6$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{singletonP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC198+1.p cond_pst_equal3_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: ($\mathrm{ssItem}(y)$ and $\forall z$: ($\mathrm{ssItem}($
($\neg\,\mathrm{memberP}(u, z)$ or $y = z$))) or ($\forall x_1$: ($\mathrm{ssItem}(x_1) \Rightarrow$ ($\mathrm{cons}(x_1, \mathrm{nil}) \neq w$ or $\neg\,\mathrm{memberP}(x, x_1)$ or $\exists x_2$: ($\mathrm{ssItem}(x_2)$ and $x_1 \neq$
x_2 and $\mathrm{memberP}(x, x_2)$ and $x_1 \leq x_2$))) and ($\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w$)))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC198-1.p cond_pst_equal3_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(a) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(a))$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(a) \Rightarrow \mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5(a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(a) \Rightarrow a \neq \mathrm{sk}_5(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_6, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
($\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_6 \leq a$) $\Rightarrow$ ($\mathrm{sk}_6 = a$ or $\mathrm{nil} = \mathrm{sk}_4$) $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_6, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
($\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_6 \leq a$) $\Rightarrow$ ($\mathrm{sk}_6 = a$ or $\mathrm{nil} = \mathrm{sk}_3$) $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

SWC199+1.p cond_pst_equal3_x_pst_equal2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: ($\mathrm{ssItem}(y)$ and $\forall z$: ($\mathrm{ssItem}($
($\neg\,\mathrm{memberP}(u, z)$ or $y = z$))) or $\exists x_1$: ($\mathrm{ssItem}(x_1)$ and $\exists x_2$: ($\mathrm{ssItem}(x_2)$ and $\exists x_3$: ($\mathrm{ssList}(x_3)$ and $\exists x_4$: ($\mathrm{ssList}(x_4)$ and $\exists x_5$: (s
x_2 and $\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_3, \mathrm{cons}(x_1, \mathrm{nil})), x_5), \mathrm{cons}(x_2, \mathrm{nil})), x_4) = w$))))))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC199-1.p cond_pst_equal3_x_pst_equal2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$

$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(a) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(a))$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(a) \Rightarrow \mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5(a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(a) \Rightarrow a \neq \mathrm{sk}_5(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{ssList}(e)$ and $\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})), e), \mathrm{cons}(b, \mathrm{nil})), d) =$
$\mathrm{sk}_3) \Rightarrow a = b$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC200+1.p cond_pst_equal3_x_pst_singleton
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\,\mathrm{singletonP}(w)$ or $\exists y$: $(\mathrm{ssItem}(g$
$(\neg\,\mathrm{memberP}(u, z)$ or $y = z))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC200-1.p cond_pst_equal3_x_pst_singleton
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{singletonP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(a) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(a) \Rightarrow \mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5(a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(a) \Rightarrow a \neq \mathrm{sk}_5(a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC201+1.p cond_pst_equal3_x_run_eq_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\,\mathrm{segmentP}(x, w)$ or $\neg\,\mathrm{equalelen}$
$(\neg\,\mathrm{memberP}(u, x_1)$ or $z = x_1)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC201-1.p cond_pst_equal3_x_run_eq_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{segmentP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\,\mathrm{equalelemsP}(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture}$
$\mathrm{ssItem}(a) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(a) \Rightarrow \mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5(a))$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(a) \Rightarrow a \neq \mathrm{sk}_5(a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC202+1.p cond_pst_equal3_x_run_eq_max2

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and $\forall z$: (ssItem(z) $\Rightarrow$ ($\neg$ memberP(u, z) or $y = z$))) or $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ (app(app(x_1, w), x_2) $\neq x$ or $\neg$ equalelemsP(w) or $\exists x_3$: (x_1 and $\exists x_5$: (ssList(x_5) and app(cons(x_3, nil), x_5) = w))) or $\exists x_6$: (ssItem(x_6) and $\exists x_7$: (ssList(x_7) and app(cons(x_6, nil), x_7) = x_2 and $\exists x_8$: (ssList(x_8) and app(x_8, cons(x_6, nil)) = w)))))) or (nil $\neq x$ and nil = w)))))) fof(co_1, conjecture)

SWC202-1.p cond_pst_equal3_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssItem(a) $\Rightarrow$ ssItem($\text{sk}_5(a)$) cnf(co1_7, negated_conjecture)
ssItem(a) $\Rightarrow$ memberP($\text{sk}_1, \text{sk}_5(a)$) cnf($\text{co1}_8$, negated_conjecture)
ssItem(a) $\Rightarrow$ $a \neq \text{sk}_5(a)$ cnf(co1_9, negated_conjecture)
ssList(sk_6) cnf(co1_{10}, negated_conjecture)
ssList(sk_7) cnf(co1_{11}, negated_conjecture)
$\text{app}(\text{app}(\text{sk}_6, \text{sk}_3), \text{sk}_7) = \text{sk}_4$ cnf(co1_{12}, negated_conjecture)
equalelemsP(sk_3) cnf(co1_{13}, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk_6 and ssList(c)) $\Rightarrow$ app(cons(a, nil), c) $\neq \text{sk}_3$ cnf(co1_{14}, negated_con
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_7 and ssList(c)) $\Rightarrow$ app(c, cons(a, nil)) $\neq \text{sk}_3$ cnf(co1_{15}, negated_con
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf(co1_{16}, negated_conjecture)

SWC203+1.p cond_pst_not_nil_ne_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $x \neq w$ or $\neg$ neq(v, nil) or neq(u, nil)))))) fof(co_1, conjecture)

SWC203-1.p cond_pst_not_nil_ne_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
$\text{sk}_4 = \text{sk}_3$ cnf(co1_7, negated_conjecture)
neq(sk_2, nil) cnf(co1_8, negated_conjecture)
$\neg$ neq(sk_1, nil) cnf(co1_9, negated_conjecture)

SWC204+1.p cond_pst_not_nil_ne_x_head2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\exists y$: (ssList(y) and y and $\exists z$: (ssList(z) and tl(x) = z and app(w, z) = y and neq(nil, x))) or neq(u, nil)) and ($\neg$ neq(v, nil) or neq(x, nil)))))))

SWC204-1.p cond_pst_not_nil_ne_x_head2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{tl}(\mathrm{sk}_4) = b$ and $\mathrm{app}(\mathrm{sk}_3, b) = a$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)) \Rightarrow (\mathrm{sk}_4 = a$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil}))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{nega}$
$\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{tl}(\mathrm{sk}_4) = b$ and $\mathrm{app}(\mathrm{sk}_3, b) = a$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow \mathrm{sk}_4 = a$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{neg}$
$\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil}) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC205+1.p cond_pst_not_nil_ne_x_id_nil_iff
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(u, \mathrm{nil})$ or $(\mathrm{ni}$
x and $\mathrm{nil} = w)$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC205-1.p cond_pst_not_nil_ne_x_id_nil_iff
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC206+1.p cond_pst_not_nil_ne_x_id_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(u, \mathrm{nil})$ or $(\mathrm{ni}$
w and $\mathrm{nil} = x)$ or $(\forall y$: $(\mathrm{ssList}(y) \Rightarrow (\neg\, \mathrm{neq}(y, \mathrm{nil})$ or $\neg\, \mathrm{segmentP}(x, y)$ or $\neg\, \mathrm{segmentP}(w, y)))$ and $\mathrm{neq}(x, \mathrm{nil})))))))$ $\mathrm{fof}(\mathrm{co}$

SWC206-1.p cond_pst_not_nil_ne_x_id_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$

$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_5, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{segmentP}(\mathrm{sk}_3, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC207+1.p cond_pst_not_nil_ne_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(u, \mathrm{nil})$ or $(\forall$
$(\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, y)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $y \neq z$ and $\mathrm{memberP}(x, z)$ and $y \leq z)))$ and $(\mathrm{nil} \neq$
x or $\mathrm{nil} \neq w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC207-1.p cond_pst_not_nil_ne_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_5 \leq a) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_5 \leq a) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$

SWC208+1.p cond_pst_not_nil_ne_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(u, \mathrm{nil})$ or $((\mathrm{r}$
x or $\mathrm{nil} \neq w)$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{frontsegP}(x, w)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC208-1.p cond_pst_not_nil_ne_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC209+1.p cond_pst_not_nil_ne_x_ne_segment_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(u, \mathrm{nil})$ or $((r$
x or $\mathrm{nil} \neq w)$ and $(\neg\,\mathrm{neq}(w, \mathrm{nil})$ or $\neg\,\mathrm{segmentP}(x, w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC209-1.p cond_pst_not_nil_ne_x_ne_segment_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\,\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC210+1.p cond_pst_not_nil_ne_x_pst_singleton_ne
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\neg\,\mathrm{singletonP}(u$

SWC210-1.p cond_pst_not_nil_ne_x_pst_singleton_ne
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{singletonP}(\mathrm{sk}_3)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{singletonP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil}) \Rightarrow \neg\,\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC211+1.p cond_pst_not_nil_ne_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssItem}(y)$ a
w and $\mathrm{app}(\mathrm{cons}(y, \mathrm{nil}), z) = x))$ or $\mathrm{neq}(u, \mathrm{nil})$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC211-1.p cond_pst_not_nil_ne_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_4) \Rightarrow \mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC212+1.p cond_pst_not_nil_ne_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssItem}(y)$ a
w and $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) = x))$ or $\mathrm{neq}(u, \mathrm{nil})$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC212-1.p cond_pst_not_nil_ne_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_4) \Rightarrow \mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC213+1.p cond_pst_not_nil_ne_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$
$\forall z$: $(\mathrm{ssList}(z) \Rightarrow (\mathrm{app}(\mathrm{app}(y, w), z) \neq x$ or $\neg\, \mathrm{equalelemsP}(w)$ or $\exists x_1$: $(\mathrm{ssItem}(x_1)$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$ and $\mathrm{app}(x_2, \mathrm{cons}(x_1,$ n
y and $\exists x_3$: $(\mathrm{ssList}(x_3)$ and $\mathrm{app}(\mathrm{cons}(x_1, \mathrm{nil}), x_3) = w)))$ or $\exists x_4$: $(\mathrm{ssItem}(x_4)$ and $\exists x_5$: $(\mathrm{ssList}(x_5)$ and $\mathrm{app}(\mathrm{cons}(x_4, \mathrm{nil}), x_5) =$
z and $\exists x_6$: $(\mathrm{ssList}(x_6)$ and $\mathrm{app}(x_6, \mathrm{cons}(x_4, \mathrm{nil})) = w))))))$ or $\mathrm{neq}(u, \mathrm{nil})$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC213-1.p cond_pst_not_nil_ne_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$

$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_3), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_5$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), c) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_con}$
$\neg\, \mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC214+1.p cond_pst_not_nil_ne_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\neg\, \mathrm{frontsegP}(x, w$

SWC214-1.p cond_pst_not_nil_ne_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{frontsegP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{strictorderedP}(a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conject}$
$\neg\, \mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC215+1.p cond_pst_not_nil_ne_x_set_max_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssItem}(y)$ a
$(\neg\, \mathrm{memberP}(x, z)$ or $\neg\, y \leq z$ or $y = z))$ and $\mathrm{memberP}(x, y))$ or $(\mathrm{memberP}(w, y)$ and $(\neg\, \mathrm{memberP}(x, y)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and
z and $\mathrm{memberP}(x, z)$ and $y \leq z)))))$ or $\mathrm{neq}(u, \mathrm{nil})))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC215-1.p cond_pst_not_nil_ne_x_set_max_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)) \Rightarrow (\mathrm{memberP}(\mathrm{sk}_3, a)$ or $\mathrm{ssItem}(\mathrm{sk}_5(a)))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)) \Rightarrow (\mathrm{memberP}(\mathrm{sk}_3, a)$ or $\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5(a)))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)) \Rightarrow (\mathrm{memberP}(\mathrm{sk}_3, a)$ or $a \leq \mathrm{sk}_5(a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $a = \mathrm{sk}_5(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)) \Rightarrow \mathrm{memberP}(\mathrm{sk}_3, a)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_3, a)) \Rightarrow \mathrm{memberP}(\mathrm{sk}_4, a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_3, a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{memberP}(\mathrm{sk}_4, b)$ and $a \leq b) \Rightarrow a = b$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

$\neg\,\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC216+1.p cond_pst_not_nil_ne_x_set_min_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: (ssItem(y) a
($\neg\,\mathrm{memberP}(x, z)$ or $\neg\, z \leq y$ or $y = z$)) and memberP(x, y)) or (memberP(w, y) and ($\neg\,\mathrm{memberP}(x, y)$ or $\exists z$: (ssItem(z) and
z and memberP(x, z) and $z \leq y$))))) or neq(u, nil)))))) fof(co_1, conjecture)

SWC216-1.p cond_pst_not_nil_ne_x_set_min_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
ssList(sk_2) $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
ssList(sk_3) $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
ssList(sk_4) $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
neq(sk_2, nil) $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or ssItem($\mathrm{sk}_5(a)$)) $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or memberP($\mathrm{sk}_4, \mathrm{sk}_5(a)$)) $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or $\mathrm{sk}_5(a) \leq a$) $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
(ssItem(a) and $a = \mathrm{sk}_5(a)$ and memberP(sk_4, a)) $\Rightarrow$ memberP(sk_3, a) $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
(ssItem(a) and memberP(sk_3, a)) $\Rightarrow$ memberP(sk_4, a) $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
(ssItem(a) and memberP(sk_3, a) and ssItem(b) and memberP(sk_4, b) and $b \leq a$) $\Rightarrow$ $a = b$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\neg\,\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC217+1.p cond_pst_not_nil_ne_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\,\mathrm{neq}(v, \mathrm{nil})$ or neq(u, nil) or (ni
w and nil $= x$) or ($\forall y$: (ssItem(y) $\Rightarrow$ (cons(y, nil) $\neq w$ or $\neg\,\mathrm{memberP}(x, y)$)) and neq($x$, nil))))))) fof($\mathrm{co}_1$, conjecture)

SWC217-1.p cond_pst_not_nil_ne_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
ssList(sk_2) $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
ssList(sk_3) $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
ssList(sk_4) $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
neq(sk_2, nil) $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\,\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
nil $= \mathrm{sk}_4$ $\Rightarrow$ nil $= \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
neq(sk_4, nil) $\Rightarrow$ cons(sk_5, nil) $= \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
neq(sk_4, nil) $\Rightarrow$ memberP($\mathrm{sk}_4, \mathrm{sk}_5$) $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC218+1.p cond_pst_not_nil_x_insert_some
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ $\forall z$: (ssList(z) $\Rightarrow$ (app(y, z) $\neq x$ or $\forall x_1$: (ssItem(x_1) $\Rightarrow$ app(app(y, cons(x_1, nil)), z) $\neq w$)))) or neq(u, nil)))))) fof(co_1, co

SWC218-1.p cond_pst_not_nil_x_insert_some
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssList(sk_5) cnf(co1_7, negated_conjecture)
ssList(sk_6) cnf(co1_8, negated_conjecture)
app(sk_5, sk_6) = sk_4 cnf(co1_9, negated_conjecture)
ssItem(sk_7) cnf(co1_{10}, negated_conjecture)
app(app(sk_5, cons(sk_7, nil)), sk_6) = sk_3 cnf(co1_{11}, negated_conjecture)
$\neg$ neq(sk_1, nil) cnf(co1_{12}, negated_conjecture)

SWC219+1.p cond_pst_pivoted1_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(z, cons(y, nil)), x_1) = u and $\forall x_2$: (ssItem(x_2) $\Rightarrow$ ($\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg\, y \leq x_2$ or $x_2 \leq y$))))) or ($\forall x_3$: (ssItem(x_3) $\Rightarrow$ (cons(x_3, nil) $\neq$ w or $\neg$ memberP(x, x_3) or $\exists x_4$: (ssItem(x_4) and $x_3 \neq x_4$ and memberP(x, x_4) and $x_4 \leq x_3$))) and (nil $\neq x$ or nil $\neq$ w))))))) fof(co_1, conjecture)

SWC219-1.p cond_pst_pivoted1_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
nil $\neq \text{sk}_1$ cnf(co1_7, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem($\text{sk}_5(c, b, a)$) cnf(co1_8, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP($b, \text{sk}_5(c, b, a)$) cnf(co1_9, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP($c, \text{sk}_5(c, b, a)$) cnf(co1_{10}, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $a \leq \text{sk}_5(c, b, a)$ cnf(co1_{11}, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg\, \text{sk}_5(c, b, a) \leq a$ cnf(co1_{12}, negated_conj
ssItem(sk_6) or nil = sk_4 cnf(co1_{13}, negated_conjecture)
ssItem(sk_6) or nil = sk_3 cnf(co1_{14}, negated_conjecture)
cons(sk_6, nil) = sk_3 or nil = sk_4 cnf(co1_{15}, negated_conjecture)
memberP(sk_4, sk_6) or nil = sk_4 cnf(co1_{16}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $a \leq \text{sk}_6$) $\Rightarrow$ ($\text{sk}_6 = a$ or nil = sk_4) cnf(co1_{17}, negated_conjecture)
cons(sk_6, nil) = sk_3 or nil = sk_3 cnf(co1_{18}, negated_conjecture)
memberP(sk_4, sk_6) or nil = sk_3 cnf(co1_{19}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $a \leq \text{sk}_6$) $\Rightarrow$ ($\text{sk}_6 = a$ or nil = sk_3) cnf(co1_{20}, negated_conjecture)

SWC220+1.p cond_pst_pivoted1_x_pst_pivoted1

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(z, cons(y, nil)), x_1) = u and $\forall x_2$: (ssItem(x_2) $\Rightarrow$ ($\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg$ $y \leq x_2$ or $x_2 \leq y$))))) or (nil $\neq w$ and $\forall x_3$: (ssItem(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $\Rightarrow$ $\forall x_5$: (ssList(x_5) $\Rightarrow$ (app(app(x_4, cons(x_3, nil)), x_5) $\neq w$ or $\exists x_6$: (ssItem(x_6) and $\neg$ $x_6 \leq x_3$ and memberP(x_4, x_6) and membe
x_6)))))))))) fof(co_1, conjecture)

SWC220-1.p cond_pst_pivoted1_x_pst_pivoted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
nil $\neq sk_1$ cnf($co1_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem($sk_5(c, b, a)$) cnf($co1_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(b, $sk_5(c, b, a)$) cnf($co1_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, $sk_5(c, b, a)$) cnf($co1_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $a \leq sk_5(c, b, a)$ cnf($co1_{11}$, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg$ $sk_5(c, b, a) \leq a$ cnf($co1_{12}$, negated_conj
nil = sk_3 or ssItem(sk_6) cnf($co1_{13}$, negated_conjecture)
nil = sk_3 or ssList(sk_7) cnf($co1_{14}$, negated_conjecture)
nil = sk_3 or ssList(sk_8) cnf($co1_{15}$, negated_conjecture)
nil = sk_3 or app(app(sk_7, cons(sk_6, nil)), sk_8) = sk_3 cnf($co1_{16}$, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and memberP(sk_8, a) and $sk_6 \leq a$) $\Rightarrow$ (nil = sk_3 or $a \leq sk_6$) cnf($co1_{17}$, negated_conject

SWC221+1.p cond_pst_pivoted1_x_pst_pivoted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$
u and $\forall x_2$: ($\neg$ ssItem(x_2) or $\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg$ $y \leq x_2$ or $x_2 \leq y$)))) or (nil $\neq w$ and $\forall x_3$: (ssItem(
$\forall x_4$: (ssList(x_4) $\Rightarrow$ $\forall x_5$: ($\neg$ ssList(x_5) or app(app(x_4, cons(x_3, nil)), x_5) $\neq w$ or $\exists x_6$: (ssItem(x_6) and $\neg$ lt(x_3, x_6) and membe
x_6)))))))))) fof(co_1, conjecture)

SWC221-1.p cond_pst_pivoted1_x_pst_pivoted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
nil $\neq sk_1$ cnf($co1_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem($sk_5(c, b, a)$) cnf($co1_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(b, $sk_5(c, b, a)$) cnf($co1_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, $sk_5(c, b, a)$) cnf($co1_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $a \leq sk_5(c, b, a)$ cnf($co1_{11}$, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg$ $sk_5(c, b, a) \leq a$ cnf($co1_{12}$, negated_conj
nil = sk_3 or ssItem(sk_6) cnf($co1_{13}$, negated_conjecture)

$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{memberP}(\mathrm{sk}_8, a)$ and $\mathrm{sk}_6 \leq a) \Rightarrow (\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{lt}(\mathrm{sk}_6, a))$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjec}$

SWC222+1.p cond_pst_pivoted1_x_pst_pivoted3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$
u and $\forall x_2$: $(\neg\, \mathrm{ssItem}(x_2)$ or $\neg\, \mathrm{memberP}(z, x_2)$ or $\neg\, \mathrm{memberP}(x_1, x_2)$ or $\neg\, y \leq x_2$ or $x_2 \leq y))))$ or $(\mathrm{nil} \neq w$ and $\forall x_3$: $(\mathrm{ssItem}($
$\forall x_4$: $(\mathrm{ssList}(x_4) \Rightarrow \forall x_5$: $(\neg\, \mathrm{ssList}(x_5)$ or $\mathrm{app}(\mathrm{app}(x_4, \mathrm{cons}(x_3, \mathrm{nil})), x_5) \neq w$ or $\exists x_6$: $(\mathrm{ssItem}(x_6)$ and $\neg\, x_3 \leq x_6$ and memberP

SWC222-1.p cond_pst_pivoted1_x_pst_pivoted3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negat}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjec}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{sk}_5(c, b, a) \leq a$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conj}$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{memberP}(\mathrm{sk}_8, a)$ and $\mathrm{lt}(\mathrm{sk}_6, a)) \Rightarrow (\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{sk}_6 \leq a)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjec}$

SWC223+1.p cond_pst_pivoted1_x_pst_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\mathrm{nil} =$
u or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})), x_1) = u$ and $\forall x_2$: $(\mathrm{ssItem}(x_2) \Rightarrow$
$(\neg\, \mathrm{memberP}(z, x_2)$ or $\neg\, \mathrm{memberP}(x_1, x_2)$ or $\neg\, y \leq x_2$ or $x_2 \leq y)))))$ or $\exists x_3$: $(\mathrm{ssItem}(x_3)$ and $\exists x_4$: $(\mathrm{ssList}(x_4)$ and $\exists x_5$: $(\mathrm{ssLis}$
w and $\exists x_6$: $(\mathrm{ssItem}(x_6)$ and $((\neg\, x_3 \leq x_6$ and $\mathrm{memberP}(x_5, x_6))$ or $(\neg\, x_6 \leq x_3$ and $\mathrm{memberP}(x_4, x_6))))))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{co}$

SWC223-1.p cond_pst_pivoted1_x_pst_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$

(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, sk_5(c, b, a)) cnf($\mathrm{co1}_{10}$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $a \leq \mathrm{sk}_5$(c, b, a) cnf($\mathrm{co1}_{11}$, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg\, \mathrm{sk}_5$(c, b, a) $\leq a$ cnf($\mathrm{co1}_{12}$, negated_conj
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_3 and ssItem(d) and memberP(c, d)) $\Rightarrow$
$a \leq d$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_3 and ssItem(d) and memberP(b, d)) $\Rightarrow$
$d \leq a$ cnf($\mathrm{co1}_{14}$, negated_conjecture)

SWC224+1.p cond_pst_pivoted1_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or nil =
u or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(z, cons(y, nil)), x_1) = u and $\forall x_2$: (ssItem(x_2) $\Rightarrow$
($\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg\, y \leq x_2$ or $x_2 \leq y$))))) or $\forall x_3$: (ssList(x_3) $\Rightarrow$ (app(w, x_3) $\neq x$ or $\neg$ equalelemsP
x_3 and $\exists x_6$: (ssList(x_6) and app(x_6, cons(x_4, nil)) = w))))) or (nil $\neq x$ and nil = w)))))) fof(co_1, conjecture)

SWC224-1.p cond_pst_pivoted1_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem(sk_5(c, b, a)) cnf($\mathrm{co1}_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(b, sk_5(c, b, a)) cnf($\mathrm{co1}_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, sk_5(c, b, a)) cnf($\mathrm{co1}_{10}$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $a \leq \mathrm{sk}_5$(c, b, a) cnf($\mathrm{co1}_{11}$, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg\, \mathrm{sk}_5$(c, b, a) $\leq a$ cnf($\mathrm{co1}_{12}$, negated_conj
ssList(sk_6) cnf($\mathrm{co1}_{13}$, negated_conjecture)
app(sk_3, sk_6) = sk_4 cnf($\mathrm{co1}_{14}$, negated_conjecture)
equalelemsP(sk_3) cnf($\mathrm{co1}_{15}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_6 and ssList(c)) $\Rightarrow$ app(c, cons(a, nil)) $\neq \mathrm{sk}_3$ cnf($\mathrm{co1}_{16}$, negated_con
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{17}$, negated_conjecture)

SWC225+1.p cond_pst_pivoted1_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$
u and $\forall x_2$: ($\neg$ ssItem(x_2) or $\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg\, y \leq x_2$ or $x_2 \leq y$)))) or $\forall x_3$: (ssList(x_3) $\Rightarrow$
$\forall x_4$: ($\neg$ ssList(x_4) or app(app(x_3, w), x_4) $\neq x$ or $\neg$ equalelemsP(w) or $\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ssList(x_6) and app(x_6, cons
x_3 and $\exists x_7$: (ssList(x_7) and app(cons(x_5, nil), x_7) = w))) or $\exists x_8$: (ssItem(x_8) and $\exists x_9$: (ssList(x_9) and app(cons(x_8, nil), x_9) =
x_4 and $\exists x_{10}$: (ssList(x_{10}) and app(x_{10}, cons(x_8, nil)) = w))))) or (nil $\neq x$ and nil = w))))) fof(co_1, conjecture)

SWC225-1.p cond_pst_pivoted1_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)

$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negat}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjec}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{sk}_5(c, b, a) \leq a$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conj}$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_6$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), c) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_7$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_con}$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$

SWC226+1.p cond_pst_pivoted1_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})), x_1) = u$ and $\forall x_2$: $(\mathrm{ssItem}(x_2) \Rightarrow (\neg\, \mathrm{memberP}(z, x_2)$ or $\neg\, \mathrm{memberP}(x_1, x_2)$ or $\neg\, y \leq x_2$ or $x_2 \leq y)))))$ or $\forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow (\mathrm{app}(w, x_3) \neq x$ or $\neg\, \mathrm{totalordered}$
x_3 and $\exists x_6$: $(\mathrm{ssItem}(x_6)$ and $\exists x_7$: $(\mathrm{ssList}(x_7)$ and $\mathrm{app}(x_7, \mathrm{cons}(x_6, \mathrm{nil})) = w$ and $x_6 \leq x_4))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC226-1.p cond_pst_pivoted1_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negat}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjec}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{sk}_5(c, b, a) \leq a$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conj}$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, c \leq a$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

SWC227+1.p cond_pst_pivoted1_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$
u and $\forall x_2$: $(\neg\, \mathrm{ssItem}(x_2)$ or $\neg\, \mathrm{memberP}(z, x_2)$ or $\neg\, \mathrm{memberP}(x_1, x_2)$ or $\neg\, y \leq x_2$ or $x_2 \leq y))))$ or $\forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow$
$\forall x_4$: $(\neg\, \mathrm{ssList}(x_4)$ or $\mathrm{app}(\mathrm{app}(x_3, w), x_4) \neq x$ or $\neg\, \mathrm{totalorderedP}(w)$ or $\exists x_5$: $(\mathrm{ssItem}(x_5)$ and $\exists x_6$: $(\mathrm{ssList}(x_6)$ and $\mathrm{app}(x_6, \mathrm{co}$
x_3 and $\exists x_7$: $(\mathrm{ssItem}(x_7)$ and $\exists x_8$: $(\mathrm{ssList}(x_8)$ and $\mathrm{app}(\mathrm{cons}(x_7, \mathrm{nil}), x_8) = w$ and $x_5 \leq x_7))))$ or $\exists x_9$: $(\mathrm{ssItem}(x_9)$ and $\exists x_{10}$: $(s$

x_4 and $\exists x_{11}$: (ssItem(x_{11}) and $\exists x_{12}$: (ssList(x_{12}) and app(x_{12}, cons(x_{11}, nil)) = w and $x_{11} \leq x_9$))))))) or (nil $\neq x$ and nil = w))))) fof(co_1, conjecture)

SWC227-1.p cond_pst_pivoted1_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem($\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(b, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $a \leq \mathrm{sk}_5(c, b, a)$ cnf($\mathrm{co1}_{11}$, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg\, \mathrm{sk}_5(c, b, a) \leq a$ cnf($\mathrm{co1}_{12}$, negated_conj
ssList(sk_6) cnf($\mathrm{co1}_{13}$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_{14}$, negated_conjecture)
app(app(sk_6, sk_3), sk_7) = sk_4 cnf($\mathrm{co1}_{15}$, negated_conjecture)
totalorderedP(sk_3) cnf($\mathrm{co1}_{16}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk_6 and ssItem(c) and ssList(d) and app(cons(c, nil), d) = sk_3) $\Rightarrow$ $\neg\, a \leq c$ cnf($\mathrm{co1}_{17}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_7 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$ $\neg\, c \leq a$ cnf($\mathrm{co1}_{18}$, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{19}$, negated_conjecture)

SWC228+1.p cond_pst_pivoted1_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(z, cons(y, nil)), x_1) = u and $\forall x_2$: (ssItem(x_2) $\Rightarrow$ ($\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg\, y \leq x_2$ or $x_2 \leq y$))))) or $\forall x_3$: (ssList(x_3) $\Rightarrow$ (app(w, x_3) $\neq x$ or $\neg$ strictordere
x_3 and $\exists x_6$: (ssItem(x_6) and $\exists x_7$: (ssList(x_7) and app(x_7, cons(x_6, nil)) = w and lt(x_6, x_4)))))))) or (nil $\neq x$ and nil = w))))))) fof(co_1, conjecture)

SWC228-1.p cond_pst_pivoted1_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem($\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(b, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $a \leq \mathrm{sk}_5(c, b, a)$ cnf($\mathrm{co1}_{11}$, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg\, \mathrm{sk}_5(c, b, a) \leq a$ cnf($\mathrm{co1}_{12}$, negated_conj
ssList(sk_6) cnf($\mathrm{co1}_{13}$, negated_conjecture)
app(sk_3, sk_6) = sk_4 cnf($\mathrm{co1}_{14}$, negated_conjecture)
strictorderedP(sk_3) cnf($\mathrm{co1}_{15}$, negated_conjecture)

(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_6 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$ $\neg$ lt(c, a) cnf($\mathrm{co1}_{16}$, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{17}$, negated_conjecture)

SWC229+1.p cond_pst_pivoted1_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or nil = u or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(z, cons(y, nil)), x_1) = u and $\forall x_2$: (ssItem(x_2) $\Rightarrow$ ($\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg$ $y \leq x_2$ or $x_2 \leq y$))))) or ($\neg$ singletonP(w) and neq(x, nil)))))))) fof(co_1, con

SWC229-1.p cond_pst_pivoted1_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
segmentP(sk_4, sk_3) cnf($\mathrm{co1}_7$, negated_conjecture)
nil $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_8$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem(sk_5(c, b, a)) cnf($\mathrm{co1}_9$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(b, sk_5(c, b, a)) cnf($\mathrm{co1}_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, sk_5(c, b, a)) cnf($\mathrm{co1}_{11}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $a \leq \mathrm{sk}_5$(c, b, a) cnf($\mathrm{co1}_{12}$, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg$ sk_5(c, b, a) $\leq a$ cnf($\mathrm{co1}_{13}$, negated_conj
neq(sk_4, nil) $\Rightarrow$ singletonP(sk_3) cnf($\mathrm{co1}_{14}$, negated_conjecture)

SWC230+1.p cond_pst_pivoted2_x_pst_equal1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(z, cons(y, nil)), x_1) = u and $\forall x_2$: (ssItem(x_2) $\Rightarrow$ ($\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg$ $y \leq x_2$ or lt(y, x_2)))))) or $\exists x_3$: (ssItem(x_3) and $\exists x_4$: (ssItem(x_4) and $\exists x_5$: (ssI
x_4 and app(app(app(x_5, cons(x_3, nil)), cons(x_4, nil)), x_6) = w)))))))))) fof(co_1, conjecture)

SWC230-1.p cond_pst_pivoted2_x_pst_equal1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem(sk_5(c, b, a)) cnf($\mathrm{co1}_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(b, sk_5(c, b, a)) cnf($\mathrm{co1}_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, sk_5(c, b, a)) cnf($\mathrm{co1}_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $a \leq \mathrm{sk}_5$(c, b, a) cnf($\mathrm{co1}_{11}$, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg$ lt(a, sk_5(c, b, a)) cnf($\mathrm{co1}_{12}$, negated_con

(ssItem(a) and ssItem(b) and ssList(c) and ssList(d) and app(app(app(c, cons(a, nil)), cons(b, nil)), d) = sk_3) $\Rightarrow$ $a = b$ cnf($\mathrm{co1}_{13}$, negated_conjecture)

SWC231+1.p cond_pst_pivoted2_x_pst_pivoted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$ u and $\forall x_2$: ($\neg$ ssItem(x_2) or $\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg\, y \leq x_2$ or lt(y, x_2))))) or (nil $\neq w$ and $\forall x_3$: (ssItem $\forall x_4$: (ssList(x_4) $\Rightarrow$ $\forall x_5$: ($\neg$ ssList(x_5) or app(app(x_4, cons(x_3, nil)), x_5) $\neq w$ or $\exists x_6$: (ssItem(x_6) and $\neg\, x_6 \leq x_3$ and memberP x_6))))))))) fof(co_1, conjecture)

SWC231-1.p cond_pst_pivoted2_x_pst_pivoted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem($\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP($b, \mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP($c, \mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $a \leq \mathrm{sk}_5(c, b, a)$ cnf($\mathrm{co1}_{11}$, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg$ lt($a, \mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_{12}$, negated_con
nil = sk_3 or ssItem(sk_6) cnf($\mathrm{co1}_{13}$, negated_conjecture)
nil = sk_3 or ssList(sk_7) cnf($\mathrm{co1}_{14}$, negated_conjecture)
nil = sk_3 or ssList(sk_8) cnf($\mathrm{co1}_{15}$, negated_conjecture)
nil = sk_3 or app(app(sk_7, cons(sk_6, nil)), sk_8) = sk_3 cnf($\mathrm{co1}_{16}$, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and memberP(sk_8, a) and $\mathrm{sk}_6 \leq a$) $\Rightarrow$ (nil = sk_3 or $a \leq \mathrm{sk}_6$) cnf($\mathrm{co1}_{17}$, negated_conject

SWC232+1.p cond_pst_pivoted2_x_pst_pivoted3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(z, cons(y, nil)), x_1) = u and $\forall x_2$: (ssItem(x_2) $\Rightarrow$ ($\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg\, y \leq x_2$ or lt(y, x_2)))))) or (nil $\neq w$ and $\forall x_3$: (ssItem(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $=$ $\forall x_5$: (ssList(x_5) $\Rightarrow$ (app(app(x_4, cons(x_3, nil)), x_5) $\neq w$ or $\exists x_6$: (ssItem(x_6) and $\neg\, x_3 \leq x_6$ and memberP(x_4, x_6) and membe

SWC232-1.p cond_pst_pivoted2_x_pst_pivoted3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem($\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP($b, \mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP($c, \mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_{10}$, negat

(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $a \leq \mathrm{sk}_5(c, b, a)$ cnf($\mathrm{co1}_{11}$, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg$ lt(a, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_{12}$, negated_con
nil = sk_3 or ssItem(sk_6) cnf($\mathrm{co1}_{13}$, negated_conjecture)
nil = sk_3 or ssList(sk_7) cnf($\mathrm{co1}_{14}$, negated_conjecture)
nil = sk_3 or ssList(sk_8) cnf($\mathrm{co1}_{15}$, negated_conjecture)
nil = sk_3 or app(app(sk_7, cons(sk_6, nil)), sk_8) = sk_3 cnf($\mathrm{co1}_{16}$, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and memberP(sk_8, a) and lt(sk_6, a)) $\Rightarrow$ (nil = sk_3 or $\mathrm{sk}_6 \leq a$) cnf($\mathrm{co1}_{17}$, negated_conjec

SWC233+1.p cond_pst_pivoted2_x_pst_strict_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(z, cons(y, nil)), x_1) = u and $\forall x_2$: (ssItem(x_2) $\Rightarrow$ ($\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg$ $y \leq x_2$ or lt(y, x_2)))))) or $\exists x_3$: (ssItem(x_3) and $\exists x_4$: (ssList(x_4) and $\exists x_5$: (ssLi
w and $\exists x_6$: (ssItem(x_6) and (($\neg$ lt(x_3, x_6) and memberP(x_5, x_6)) or ($\neg$ lt(x_6, x_3) and memberP(x_4, x_6)))))))))))) fof(co_1, c

SWC233-1.p cond_pst_pivoted2_x_pst_strict_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem($\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(b, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $a \leq \mathrm{sk}_5(c, b, a)$ cnf($\mathrm{co1}_{11}$, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg$ lt(a, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_{12}$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_3 and ssItem(d) and memberP(c, d)) $\Rightarrow$
lt(a, d) cnf($\mathrm{co1}_{13}$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_3 and ssItem(d) and memberP(b, d)) $\Rightarrow$
lt(d, a) cnf($\mathrm{co1}_{14}$, negated_conjecture)

SWC234+1.p cond_pst_pivoted2_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$
u and $\forall x_2$: ($\neg$ ssItem(x_2) or $\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg$ $y \leq x_2$ or lt(y, x_2))))) or $\forall x_3$: ($\neg$ ssList(x_3) or app
x or $\neg$ equalelemsP(w) or $\exists x_4$: (ssItem(x_4) and $\exists x_5$: (ssList(x_5) and app(cons(x_4, nil), x_5) = x_3 and $\exists x_6$: (ssList(x_6) and app
w)))) or (nil $\neq x$ and nil = w))))) fof(co_1, conjecture)

SWC234-1.p cond_pst_pivoted2_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)

$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negat}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjec}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{lt}(a, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_con}$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_con}$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

SWC235+1.p cond_pst_pivoted2_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})), x_1) = u$ and $\forall x_2$: $(\mathrm{ssItem}(x_2) \Rightarrow (\neg\, \mathrm{memberP}(z, x_2)$ or $\neg\, \mathrm{memberP}(x_1, x_2)$ or $\neg\, y \leq x_2$ or $\mathrm{lt}(y, x_2)))))))$ or $\forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow \forall x_4$: $(\mathrm{ssList}(x_4) \Rightarrow (\mathrm{app}(\mathrm{app}(x_3, w), x_4) \neq x$ or $\neg\, \mathrm{equalelemsP}(w)$ or $\exists x_5$: $(\mathrm{ssItem}(x_5)$ and $\exists x_6$: $(\mathrm{ssList}(x_6)$ and $\mathrm{app}(x_6, \mathrm{cons}(x_5, \mathrm{nil})) = x_3$ and $\exists x_7$: $(\mathrm{ssList}(x_7)$ and $\mathrm{app}(\mathrm{cons}(x_5, \mathrm{nil}), x_7) = w)))$ or $\exists x_8$: $(\mathrm{ssItem}(x_8)$ and $\exists x_9$: $(\mathrm{ssList}(x_9)$ and $\mathrm{app}(\mathrm{cons}(x_8, \mathrm{nil}), x_9) = x_4$ and $\exists x_{10}$: $(\mathrm{ssList}(x_{10})$ and $\mathrm{app}(x_{10}, \mathrm{cons}(x_8, \mathrm{nil})) = w))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC235-1.p cond_pst_pivoted2_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negat}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjec}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{lt}(a, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_con}$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_6$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), c) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_7$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_con}$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$

SWC236+1.p cond_pst_pivoted2_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})), x_1) = u$ and $\forall x_2$: $(\mathrm{ssItem}(x_2) \Rightarrow (\neg\, \mathrm{memberP}(z, x_2)$ or $\neg\, \mathrm{memberP}(x_1, x_2)$ or $\neg\, y \leq x_2$ or $\mathrm{lt}(y, x_2)))))))$ or $\forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow \forall x_4$: $(\mathrm{ssList}(x_4) \Rightarrow (\mathrm{app}(\mathrm{app}(x_3, w), x_4) \neq x$ or $\neg\, \mathrm{totalorderedP}(w)$ or $\exists x_5$: $(\mathrm{ssItem}(x_5)$ and $\exists x_6$: $(\mathrm{ssList}(x_6)$ and $\mathrm{app}(x_6, \mathrm{cons}(x_5, \mathrm{nil})) = x_3$ and $\exists x_7$: $(\mathrm{ssItem}(x_7)$ and $\exists x_8$: $(\mathrm{ssList}(x_8)$ and $\mathrm{app}(\mathrm{cons}(x_7, \mathrm{nil}), x_8) = w$ and $x_5 \leq x_7))))$ or $\exists x_9$: $(\mathrm{ssItem}(x_9)$ and $\exists x_{10}$: $(\mathrm{ssList}(x_{10})$ and $\mathrm{app}(x_{10}, \mathrm{cons}(x_9, \mathrm{nil})) = x_4$ and $\exists x_{11}$: $(\mathrm{ssItem}(x_{11})$ and $\exists x_{12}$: $(\mathrm{ssList}(x_{12})$ and $\mathrm{app}(x_{12}, \mathrm{cons}(x_{11}, \mathrm{nil})) = w$ and $x_{11} \leq x_9)))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC236-1.p cond_pst_pivoted2_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negat}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjec}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{lt}(a, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_con}$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_6$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{cons}(c, \mathrm{nil}), d) = \mathrm{sk}_3) \Rightarrow$
$\neg\, a \leq c$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_7$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, c \leq a$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$

SWC237+1.p cond_pst_pivoted2_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$
u and $\forall x_2$: $(\neg\, \mathrm{ssItem}(x_2)$ or $\neg\, \mathrm{memberP}(z, x_2)$ or $\neg\, \mathrm{memberP}(x_1, x_2)$ or $\neg\, y \leq x_2$ or $\mathrm{lt}(y, x_2)))))$ or $\forall x_3$: $(\neg\, \mathrm{ssList}(x_3)$ or app
x or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists x_4$: $(\mathrm{ssItem}(x_4)$ and $\exists x_5$: $(\mathrm{ssList}(x_5)$ and $\mathrm{app}(\mathrm{cons}(x_4, \mathrm{nil}), x_5) = x_3$ and $\exists x_6$: $(\mathrm{ssItem}(x_6)$ and $\exists$
w and $\mathrm{lt}(x_6, x_4))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w)))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC237-1.p cond_pst_pivoted2_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negat}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjec}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{lt}(a, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_con}$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, \mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

SWC238+1.p cond_pst_pivoted2_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or nil $=$ u or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(z, cons(y, nil)), x_1) $= u$ and $\forall x_2$: (ssItem(x_2) $\Rightarrow$ ($\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg\, y \leq x_2$ or lt(y, x_2)))))) or $\forall x_3$: (ssList(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $\Rightarrow$ (app(app(x_3, w), x_4) $\neq x$ or $\neg$ strictorderedP(w) or $\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ssList(x_6) and app(x_6, cons(x_5, nil)) $=$ x_3 and $\exists x_7$: (ssItem(x_7) and $\exists x_8$: (ssList(x_8) and app(cons(x_7, nil), x_8) $= w$ and lt(x_5, x_7))))) or $\exists x_9$: (ssItem(x_9) and $\exists x_{10}$: x_4 and $\exists x_{11}$: (ssItem(x_{11}) and $\exists x_{12}$: (ssList(x_{12}) and app(x_{12}, cons(x_{11}, nil)) $=$ w and lt(x_{11}, x_9)))))))) or (nil $\neq$ x and nil $= w$)))))) fof(co$_1$, conjecture)

SWC238-1.p cond_pst_pivoted2_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
nil $\neq$ sk$_1$ cnf(co1$_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk$_1$) $\Rightarrow$ ssItem(sk$_5$(c, b, a)) cnf(co1$_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk$_1$) $\Rightarrow$ memberP(b, sk$_5$(c, b, a)) cnf(co1$_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk$_1$) $\Rightarrow$ memberP(c, sk$_5$(c, b, a)) cnf(co1$_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk$_1$) $\Rightarrow$ $a \leq$ sk$_5$(c, b, a) cnf(co1$_{11}$, negated_conjec
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk$_1$) $\Rightarrow$ $\neg$ lt(a, sk$_5$(c, b, a)) cnf(co1$_{12}$, negated_con
ssList(sk$_6$) cnf(co1$_{13}$, negated_conjecture)
ssList(sk$_7$) cnf(co1$_{14}$, negated_conjecture)
app(app(sk$_6$, sk$_3$), sk$_7$) = sk$_4$ cnf(co1$_{15}$, negated_conjecture)
strictorderedP(sk$_3$) cnf(co1$_{16}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk$_6$ and ssItem(c) and ssList(d) and app(cons(c, nil), d) = sk$_3$) $\Rightarrow$ $\neg$ lt(a, c) cnf(co1$_{17}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk$_7$ and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk$_3$) $\Rightarrow$ $\neg$ lt(c, a) cnf(co1$_{18}$, negated_conjecture)
nil = sk$_3$ $\Rightarrow$ nil = sk$_4$ cnf(co1$_{19}$, negated_conjecture)

SWC239+1.p cond_pst_pivoted3_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or nil $=$ u or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(z, cons(y, nil)), x_1) $= u$ and $\forall x_2$: (ssItem(x_2) $\Rightarrow$ ($\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg$ lt(y, x_2) or $y \leq x_2$))))) or ($\forall x_3$: (ssItem(x_3) $\Rightarrow$ (cons(x_3, nil) $\neq$ w or $\neg$ memberP(x, x_3) or $\exists x_4$: (ssItem(x_4) and $x_3 \neq x_4$ and memberP(x, x_4) and $x_3 \leq x_4$))) and (nil $\neq x$ or nil $\neq$ w))))))) fof(co$_1$, conjecture)

SWC239-1.p cond_pst_pivoted3_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)

$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem($\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(b, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ lt(a, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_{11}$, negated_conje
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg\, a \leq \mathrm{sk}_5(c, b, a)$ cnf($\mathrm{co1}_{12}$, negated_conj
ssItem(sk_6) or nil = sk_4 cnf($\mathrm{co1}_{13}$, negated_conjecture)
ssItem(sk_6) or nil = sk_3 cnf($\mathrm{co1}_{14}$, negated_conjecture)
cons(sk_6, nil) = sk_3 or nil = sk_4 cnf($\mathrm{co1}_{15}$, negated_conjecture)
memberP(sk_4, sk_6) or nil = sk_4 cnf($\mathrm{co1}_{16}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\mathrm{sk}_6 \leq a$) $\Rightarrow$ ($\mathrm{sk}_6 = a$ or nil = sk_4) cnf($\mathrm{co1}_{17}$, negated_conjecture)
cons(sk_6, nil) = sk_3 or nil = sk_3 cnf($\mathrm{co1}_{18}$, negated_conjecture)
memberP(sk_4, sk_6) or nil = sk_3 cnf($\mathrm{co1}_{19}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\mathrm{sk}_6 \leq a$) $\Rightarrow$ ($\mathrm{sk}_6 = a$ or nil = sk_3) cnf($\mathrm{co1}_{20}$, negated_conjecture)

SWC240+1.p cond_pst_pivoted3_x_pst_equal3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(z, cons(y, nil)), x_1) = u and $\forall x_2$: (ssItem(x_2) $\Rightarrow$ ($\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg$ lt(y, x_2) or $y \leq x_2$))))) or $\forall x_3$: (ssItem(x_3) $\Rightarrow$ $\exists x_4$: (ssItem(x_4) and $x_3 \neq x_4$ and memberP(w, x_4)))))))) fof(co_1, conjecture)

SWC240-1.p cond_pst_pivoted3_x_pst_equal3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil $\neq \mathrm{sk}_1$ cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem($\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(b, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ lt(a, $\mathrm{sk}_5(c, b, a)$) cnf($\mathrm{co1}_{11}$, negated_conje
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg\, a \leq \mathrm{sk}_5(c, b, a)$ cnf($\mathrm{co1}_{12}$, negated_conj
ssItem(sk_6) cnf($\mathrm{co1}_{13}$, negated_conjecture)
(ssItem(a) and memberP(sk_3, a)) $\Rightarrow$ $\mathrm{sk}_6 = a$ cnf($\mathrm{co1}_{14}$, negated_conjecture)

SWC241+1.p cond_pst_pivoted3_x_pst_pivoted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$
u and $\forall x_2$: ($\neg$ ssItem(x_2) or $\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg$ lt(y, x_2) or $y \leq x_2$)))) or (nil $\neq w$ and $\forall x_3$: (ssItem
$\forall x_4$: (ssList(x_4) $\Rightarrow$ $\forall x_5$: ($\neg$ ssList(x_5) or app(app(x_4, cons(x_3, nil)), x_5) $\neq w$ or $\exists x_6$: (ssItem(x_6) and $\neg\, x_6 \leq x_3$ and memberP
x_6))))))))) fof(co_1, conjecture)

SWC241-1.p cond_pst_pivoted3_x_pst_pivoted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')

$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negat}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{lt}(a, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conje}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conj}$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{memberP}(\mathrm{sk}_8, a)$ and $\mathrm{sk}_6 \leq a) \Rightarrow (\mathrm{nil} = \mathrm{sk}_3$ or $a \leq \mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conject}$

SWC242+1.p cond_pst_pivoted3_x_pst_pivoted3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$
u and $\forall x_2$: $(\neg\, \mathrm{ssItem}(x_2)$ or $\neg\, \mathrm{memberP}(z, x_2)$ or $\neg\, \mathrm{memberP}(x_1, x_2)$ or $\neg\, \mathrm{lt}(y, x_2)$ or $y \leq x_2))))$ or $(\mathrm{nil} \neq w$ and $\forall x_3$: $(\mathrm{ssItem}$
$\forall x_4$: $(\mathrm{ssList}(x_4) \Rightarrow \forall x_5$: $(\neg\, \mathrm{ssList}(x_5)$ or $\mathrm{app}(\mathrm{app}(x_4, \mathrm{cons}(x_3, \mathrm{nil})), x_5) \neq w$ or $\exists x_6$: $(\mathrm{ssItem}(x_6)$ and $\neg\, x_3 \leq x_6$ and memberP

SWC242-1.p cond_pst_pivoted3_x_pst_pivoted3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negat}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{lt}(a, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conje}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conj}$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{memberP}(\mathrm{sk}_8, a)$ and $\mathrm{lt}(\mathrm{sk}_6, a)) \Rightarrow (\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{sk}_6 \leq a)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjec}$

SWC243+1.p cond_pst_pivoted3_x_pst_sorted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{totalorderedP}(w)$ or $\mathrm{nil} =$
u or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})), x_1) = u$ and $\forall x_2$: $(\mathrm{ssItem}(x_2) \Rightarrow$
$(\neg\, \mathrm{memberP}(z, x_2)$ or $\neg\, \mathrm{memberP}(x_1, x_2)$ or $\neg\, \mathrm{lt}(y, x_2)$ or $y \leq x_2)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC243-1.p cond_pst_pivoted3_x_pst_sorted1

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{ssList}(c) \text{ and } \mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{ssList}(c) \text{ and } \mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negate}$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{ssList}(c) \text{ and } \mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negate}$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{ssList}(c) \text{ and } \mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{lt}(a, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conje}$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{ssList}(c) \text{ and } \mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conj}$

SWC244+1.p cond_pst_pivoted3_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{frontsegP}(x, w) \text{ or } \neg\, \mathrm{equalelem}$
u or $\exists y$: $(\mathrm{ssList}(y) \text{ and } \mathrm{neq}(w, y) \text{ and } \mathrm{frontsegP}(x, y) \text{ and } \mathrm{segmentP}(y, w) \text{ and } \mathrm{equalelemsP}(y))$ or $\exists z$: $(\mathrm{ssItem}(z) \text{ and } \exists x_1$: $(\mathrm{ss}$
u and $\forall x_3$: $(\mathrm{ssItem}(x_3) \Rightarrow (\neg\, \mathrm{memberP}(x_1, x_3) \text{ or } \neg\, \mathrm{memberP}(x_2, x_3) \text{ or } \neg\, \mathrm{lt}(z, x_3) \text{ or } z \leq x_3)))))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture}$

SWC244-1.p cond_pst_pivoted3_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{neq}(\mathrm{sk}_3, a) \text{ and } \mathrm{frontsegP}(\mathrm{sk}_4, a) \text{ and } \mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{equalelemsP}(a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjectur}$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{ssList}(c) \text{ and } \mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_co}$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{ssList}(c) \text{ and } \mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negate}$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{ssList}(c) \text{ and } \mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negate}$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{ssList}(c) \text{ and } \mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{lt}(a, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conje}$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{ssList}(b) \text{ and } \mathrm{ssList}(c) \text{ and } \mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conj}$

SWC245+1.p cond_pst_pivoted3_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x) \text{ or } v \neq x \text{ or } u \neq w \text{ or } \mathrm{nil} = u \text{ or } \exists y$: $(\mathrm{ssItem}(y) \text{ and } \exists z$
u and $\forall x_2$: $(\neg\, \mathrm{ssItem}(x_2) \text{ or } \neg\, \mathrm{memberP}(z, x_2) \text{ or } \neg\, \mathrm{memberP}(x_1, x_2) \text{ or } \neg\, \mathrm{lt}(y, x_2) \text{ or } y \leq x_2))))$ or $\forall x_3$: $(\neg\, \mathrm{ssList}(x_3) \text{ or } \mathrm{app}$
x or $\neg\, \mathrm{equalelemsP}(w)$ or $\exists x_4$: $(\mathrm{ssItem}(x_4) \text{ and } \exists x_5$: $(\mathrm{ssList}(x_5) \text{ and } \mathrm{app}(\mathrm{cons}(x_4, \mathrm{nil}), x_5) = x_3 \text{ and } \exists x_6$: $(\mathrm{ssList}(x_6) \text{ and } \mathrm{app}$
$w))))$ or $(\mathrm{nil} \neq x \text{ and } \mathrm{nil} = w)))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC245-1.p cond_pst_pivoted3_x_run_eq_front2

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negat}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{lt}(a, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conje}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conj}$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_con}$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

SWC246+1.p cond_pst_pivoted3_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\mathrm{nil} = u$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$
u and $\forall x_2$: $(\neg\, \mathrm{ssItem}(x_2)$ or $\neg\, \mathrm{memberP}(z, x_2)$ or $\neg\, \mathrm{memberP}(x_1, x_2)$ or $\neg\, \mathrm{lt}(y, x_2)$ or $y \leq x_2))))$ or $\forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow$
$\forall x_4$: $(\neg\, \mathrm{ssList}(x_4)$ or $\mathrm{app}(\mathrm{app}(x_3, w), x_4) \neq x$ or $\neg\, \mathrm{equalelemsP}(w)$ or $\exists x_5$: $(\mathrm{ssItem}(x_5)$ and $\exists x_6$: $(\mathrm{ssList}(x_6)$ and $\mathrm{app}(x_6, \mathrm{cons}$
x_3 and $\exists x_7$: $(\mathrm{ssList}(x_7)$ and $\mathrm{app}(\mathrm{cons}(x_5, \mathrm{nil}), x_7) = w)))$ or $\exists x_8$: $(\mathrm{ssItem}(x_8)$ and $\exists x_9$: $(\mathrm{ssList}(x_9)$ and $\mathrm{app}(\mathrm{cons}(x_8, \mathrm{nil}), x_9) =$
x_4 and $\exists x_{10}$: $(\mathrm{ssList}(x_{10})$ and $\mathrm{app}(x_{10}, \mathrm{cons}(x_8, \mathrm{nil})) = w)))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w)))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC246-1.p cond_pst_pivoted3_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negat}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{lt}(a, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conje}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conj}$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_6$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), c) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_7$ and $\mathrm{ssList}(c)) \Rightarrow \mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_con}$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$

SWC247+1.p cond_pst_pivoted3_x_run_ord_front1

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ frontsegP(x, w) or $\neg$ totalorde
u or $\exists y$: (ssList(y) and neq(w, y) and frontsegP(x, y) and segmentP(y, w) and totalorderedP(y)) or $\exists z$: (ssItem(z) and $\exists x_1$: (
u and $\forall x_3$: (ssItem(x_3) $\Rightarrow$ ($\neg$ memberP(x_1, x_3) or $\neg$ memberP(x_2, x_3) or $\neg$ lt(z, x_3) or $z \leq x_3$)))))))))) fof(co_1, conjecture

SWC247-1.p cond_pst_pivoted3_x_run_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
frontsegP(sk_4, sk_3) cnf($co1_7$, negated_conjecture)
totalorderedP(sk_3) cnf($co1_8$, negated_conjecture)
$nil \neq sk_1$ cnf($co1_9$, negated_conjecture)
(ssList(a) and neq(sk_3, a) and frontsegP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ totalorderedP(a) cnf($co1_{10}$, negated_conjectu
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem($sk_5(c, b, a)$) cnf($co1_{11}$, negated_co
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP($b, sk_5(c, b, a)$) cnf($co1_{12}$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP($c, sk_5(c, b, a)$) cnf($co1_{13}$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ lt($a, sk_5(c, b, a)$) cnf($co1_{14}$, negated_conje
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg$ $a \leq sk_5(c, b, a)$ cnf($co1_{15}$, negated_conj

SWC248+1.p cond_pst_pivoted3_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$
u and $\forall x_2$: ($\neg$ ssItem(x_2) or $\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg$ lt(y, x_2) or $y \leq x_2$)))) or $\forall x_3$: (ssList(x_3) $\Rightarrow$
$\forall x_4$: ($\neg$ ssList(x_4) or app(app(x_3, w), x_4) $\neq x$ or $\neg$ totalorderedP(w) or $\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ssList(x_6) and app(x_6, co
x_3 and $\exists x_7$: (ssItem(x_7) and $\exists x_8$: (ssList(x_8) and app(cons(x_7, nil), x_8) = w and $x_5 \leq x_7$)))) or $\exists x_9$: (ssItem(x_9) and $\exists x_{10}$: (s
x_4 and $\exists x_{11}$: (ssItem(x_{11}) and $\exists x_{12}$: (ssList(x_{12}) and app(x_{12}, cons(x_{11}, nil)) = w and $x_{11} \leq x_9$))))))) or (nil $\neq x$ and nil =
w))))) fof(co_1, conjecture)

SWC248-1.p cond_pst_pivoted3_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
$nil \neq sk_1$ cnf($co1_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem($sk_5(c, b, a)$) cnf($co1_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP($b, sk_5(c, b, a)$) cnf($co1_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP($c, sk_5(c, b, a)$) cnf($co1_{10}$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ lt($a, sk_5(c, b, a)$) cnf($co1_{11}$, negated_conje
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg$ $a \leq sk_5(c, b, a)$ cnf($co1_{12}$, negated_conj
ssList(sk_6) cnf($co1_{13}$, negated_conjecture)
ssList(sk_7) cnf($co1_{14}$, negated_conjecture)
app(app(sk_6, sk_3), sk_7) = sk_4 cnf($co1_{15}$, negated_conjecture)

totalorderedP(sk_3) cnf($co1_{16}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk_6 and ssItem(c) and ssList(d) and app(cons(c, nil), d) = sk_3) ⇒ ¬ $a \leq c$ cnf($co1_{17}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_7 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) ⇒ ¬ $c \leq a$ cnf($co1_{18}$, negated_conjecture)
nil = sk_3 ⇒ nil = sk_4 cnf($co1_{19}$, negated_conjecture)

SWC249+1.p cond_pst_pivoted3_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
∀u: (ssList(u) ⇒ ∀v: (ssList(v) ⇒ ∀w: (ssList(w) ⇒ ∀x: (ssList(x) ⇒ ($v \neq x$ or $u \neq w$ or ¬ frontsegP(x, w) or ¬ strictorde
u or ∃y: (ssList(y) and neq(w, y) and frontsegP(x, y) and segmentP(y, w) and strictorderedP(y)) or ∃z: (ssItem(z) and ∃x_1:
u and ∀x_3: (ssItem(x_3) ⇒ (¬ memberP(x_1, x_3) or ¬ memberP(x_2, x_3) or ¬ lt(z, x_3) or $z \leq x_3$))))))))) fof(co_1, conjecture

SWC249-1.p cond_pst_pivoted3_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
frontsegP(sk_4, sk_3) cnf($co1_7$, negated_conjecture)
strictorderedP(sk_3) cnf($co1_8$, negated_conjecture)
nil ≠ sk_1 cnf($co1_9$, negated_conjecture)
(ssList(a) and neq(sk_3, a) and frontsegP(sk_4, a) and segmentP(a, sk_3)) ⇒ ¬ strictorderedP(a) cnf($co1_{10}$, negated_conject
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) ⇒ ssItem(sk_5(c, b, a)) cnf($co1_{11}$, negated_co
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) ⇒ memberP(b, sk_5(c, b, a)) cnf($co1_{12}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) ⇒ memberP(c, sk_5(c, b, a)) cnf($co1_{13}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) ⇒ lt(a, sk_5(c, b, a)) cnf($co1_{14}$, negated_conje
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) ⇒ ¬ $a \leq sk_5$(c, b, a) cnf($co1_{15}$, negated_conj

SWC250+1.p cond_pst_pivoted3_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
∀u: (ssList(u) ⇒ ∀v: (ssList(v) ⇒ ∀w: (ssList(w) ⇒ ∀x: (¬ ssList(x) or $v \neq x$ or $u \neq w$ or nil = u or ∃y: (ssItem(y) and ∃z
u and ∀x_2: (¬ ssItem(x_2) or ¬ memberP(z, x_2) or ¬ memberP(x_1, x_2) or ¬ lt(y, x_2) or $y \leq x_2$)))) or ∀x_3: (¬ ssList(x_3) or app(
x or ¬ strictorderedP(w) or ∃x_4: (ssItem(x_4) and ∃x_5: (ssList(x_5) and app(cons(x_4, nil), x_5) = x_3 and ∃x_6: (ssItem(x_6) and ∃
w and lt(x_6, x_4)))))) or (nil ≠ x and nil = w))))) fof(co_1, conjecture)

SWC250-1.p cond_pst_pivoted3_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
nil ≠ sk_1 cnf($co1_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) ⇒ ssItem(sk_5(c, b, a)) cnf($co1_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) ⇒ memberP(b, sk_5(c, b, a)) cnf($co1_9$, negate

(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, sk_5(c, b, a)) cnf($\mathrm{co1}_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ lt(a, sk_5(c, b, a)) cnf($\mathrm{co1}_{11}$, negated_conje
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg$ $a \leq \mathrm{sk}_5$(c, b, a) cnf($\mathrm{co1}_{12}$, negated_conj
ssList(sk_6) cnf($\mathrm{co1}_{13}$, negated_conjecture)
app(sk_3, sk_6) = sk_4 cnf($\mathrm{co1}_{14}$, negated_conjecture)
strictorderedP(sk_3) cnf($\mathrm{co1}_{15}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_6 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$
$\neg$ lt(c, a) cnf($\mathrm{co1}_{16}$, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{17}$, negated_conjecture)

SWC251+1.p cond_pst_pivoted3_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or nil = u or $\exists y$: (ssItem(y) and $\exists z$
u and $\forall x_2$: ($\neg$ ssItem(x_2) or $\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg$ lt(y, x_2) or $y \leq x_2$)))) or $\forall x_3$: (ssList(x_3) $\Rightarrow$
$\forall x_4$: ($\neg$ ssList(x_4) or app(app(x_3, w), x_4) $\neq x$ or $\neg$ strictorderedP(w) or $\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ssList(x_6) and app(x_6, co
x_3 and $\exists x_7$: (ssItem(x_7) and $\exists x_8$: (ssList(x_8) and app(cons(x_7, nil), x_8) = w and lt(x_5, x_7))))) or $\exists x_9$: (ssItem(x_9) and $\exists x_{10}$:
x_4 and $\exists x_{11}$: (ssItem(x_{11}) and $\exists x_{12}$: (ssList(x_{12}) and app(x_{12}, cons(x_{11}, nil)) = w and lt(x_{11}, x_9)))))))) or (nil $\neq x$ and nil =
w))))) fof(co_1, conjecture)

SWC251-1.p cond_pst_pivoted3_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
sk_2 = sk_4 cnf($\mathrm{co1}_5$, negated_conjecture)
sk_1 = sk_3 cnf($\mathrm{co1}_6$, negated_conjecture)
nil $\neq$ sk_1 cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ ssItem(sk_5(c, b, a)) cnf($\mathrm{co1}_8$, negated_con
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(b, sk_5(c, b, a)) cnf($\mathrm{co1}_9$, negate
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ memberP(c, sk_5(c, b, a)) cnf($\mathrm{co1}_{10}$, negat
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ lt(a, sk_5(c, b, a)) cnf($\mathrm{co1}_{11}$, negated_conje
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_1) $\Rightarrow$ $\neg$ $a \leq \mathrm{sk}_5$(c, b, a) cnf($\mathrm{co1}_{12}$, negated_conj
ssList(sk_6) cnf($\mathrm{co1}_{13}$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_{14}$, negated_conjecture)
app(app(sk_6, sk_3), sk_7) = sk_4 cnf($\mathrm{co1}_{15}$, negated_conjecture)
strictorderedP(sk_3) cnf($\mathrm{co1}_{16}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk_6 and ssItem(c) and ssList(d) and app(cons(c, nil), d) = sk_3) $\Rightarrow$
$\neg$ lt(a, c) cnf($\mathrm{co1}_{17}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_7 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$
$\neg$ lt(c, a) cnf($\mathrm{co1}_{18}$, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{19}$, negated_conjecture)

SWC252+1.p cond_pst_pivoted3_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or nil =
u or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and app(app(z, cons(y, nil)), x_1) = u and $\forall x_2$: (ssItem(x_2) $\Rightarrow$
($\neg$ memberP(z, x_2) or $\neg$ memberP(x_1, x_2) or $\neg$ lt(y, x_2) or $y \leq x_2$))))) or ($\forall x_3$: (ssItem(x_3) $\Rightarrow$ (cons(x_3, nil) $\neq$
w or $\neg$ memberP(x, x_3))) and (nil $\neq x$ or nil $\neq w$))))))) fof(co_1, conjecture)

SWC252-1.p cond_pst_pivoted3_x_some_total2

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_con}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(b, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negate}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{memberP}(c, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negat}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \mathrm{lt}(a, \mathrm{sk}_5(c, b, a))$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conje}$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_1) \Rightarrow \neg\, a \leq \mathrm{sk}_5(c, b, a)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conj}$
$\mathrm{ssItem}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_6, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_6, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC253+1.p cond_pst_singleton_ne_x_head2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ a
y and $\exists z$: $(\mathrm{ssList}(z)$ and $\mathrm{tl}(x) = z$ and $\mathrm{app}(w, z) = y$ and $\mathrm{neq}(\mathrm{nil}, x)))$ or $\mathrm{singletonP}(u))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil}))))))$

SWC253-1.p cond_pst_singleton_ne_x_head2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{tl}(\mathrm{sk}_4) = b$ and $\mathrm{app}(\mathrm{sk}_3, b) = a$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)) \Rightarrow (\mathrm{sk}_4 = a$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil}))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{nega}$
$\mathrm{singletonP}(\mathrm{sk}_1) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{tl}(\mathrm{sk}_4) = b$ and $\mathrm{app}(\mathrm{sk}_3, b) = a$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow \mathrm{sk}_4 = a$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{neg}$
$\mathrm{singletonP}(\mathrm{sk}_1) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC254+1.p cond_pst_singleton_ne_x_last
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\forall y$: $(\mathrm{ssItem}(y)$
$\forall z$: $(\mathrm{ssList}(z) \Rightarrow (\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) \neq x)))$ or $\mathrm{singletonP}(u))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil}))))))))$

SWC254-1.p cond_pst_singleton_ne_x_last
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.

include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{singletonP}(\mathrm{sk}_1) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{singletonP}(\mathrm{sk}_1) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC255+1.p cond_pst_singleton_ne_x_pst_singleton_ne
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ((¬ neq(v, nil) or ¬ singletonP(u

SWC255-1.p cond_pst_singleton_ne_x_pst_singleton_ne
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{singletonP}(\mathrm{sk}_3)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{singletonP}(\mathrm{sk}_1) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{singletonP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{singletonP}(\mathrm{sk}_1) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC256+1.p cond_pst_singleton_ne_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ¬ neq(v, nil) or singletonP(u) or ($\mathrm{cons}(y, \mathrm{nil}) \neq w$ or ¬ memberP(x, y))) and (nil $\neq x$ or nil $\neq w$))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC256-1.p cond_pst_singleton_ne_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$

$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{singletonP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC257+1.p cond_pst_sorted1_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\mathrm{totalorderedP}(u)$ or ($\forall y$: ($\neg$ ssIt
w or $\neg\, \mathrm{memberP}(x, y)$ or $\exists z$: ($\mathrm{ssItem}(z)$ and $y \neq z$ and $\mathrm{memberP}(x, z)$ and $y \leq z$)) and ($\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w$)))))) $\mathrm{fof}(\mathrm{co}_1,$

SWC257-1.p cond_pst_sorted1_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
($\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_5 \leq a$) $\Rightarrow$ ($\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_4$) $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
($\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $\mathrm{sk}_5 \leq a$) $\Rightarrow$ ($\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_3$) $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC258+1.p cond_pst_sorted1_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or $\mathrm{totalorderedP}(u)$ or ($\forall y$: (ssItem
($\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, y)$ or $\exists z$: ($\mathrm{ssItem}(z)$ and $y \neq z$ and $\mathrm{memberP}(x, z)$ and $z \leq y$))) and ($\mathrm{nil} \neq$
x or $\mathrm{nil} \neq w$))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC258-1.p cond_pst_sorted1_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$

$\neg$ totalorderedP(sk_1) cnf($\mathrm{co1}_7$, negated_conjecture)
ssItem(sk_5) or nil = sk_4 cnf($\mathrm{co1}_8$, negated_conjecture)
ssItem(sk_5) or nil = sk_3 cnf($\mathrm{co1}_9$, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_4 cnf($\mathrm{co1}_{10}$, negated_conjecture)
memberP(sk_4, sk_5) or nil = sk_4 cnf($\mathrm{co1}_{11}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $a \leq \mathrm{sk}_5$) $\Rightarrow$ ($\mathrm{sk}_5 = a$ or nil = sk_4) cnf($\mathrm{co1}_{12}$, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_3 cnf($\mathrm{co1}_{13}$, negated_conjecture)
memberP(sk_4, sk_5) or nil = sk_3 cnf($\mathrm{co1}_{14}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $a \leq \mathrm{sk}_5$) $\Rightarrow$ ($\mathrm{sk}_5 = a$ or nil = sk_3) cnf($\mathrm{co1}_{15}$, negated_conjecture)

SWC259+1.p cond_pst_sorted1_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or totalorderedP(u) or ($\forall y$: (ssItem
$\forall z$: (ssList(z) $\Rightarrow$ $\forall x_1$: ($\neg$ ssList(x_1) or cons(y, nil) $\neq w$ or app(app(z, w), x_1) $\neq x$ or $\exists x_2$: (ssItem(x_2) and memberP(z, x_2) an
x or nil $\neq w$)))))) fof(co_1, conjecture)

SWC259-1.p cond_pst_sorted1_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
$\neg$ totalorderedP(sk_1) cnf($\mathrm{co1}_7$, negated_conjecture)
ssItem(sk_5) or nil = sk_4 cnf($\mathrm{co1}_8$, negated_conjecture)
ssItem(sk_5) or nil = sk_3 cnf($\mathrm{co1}_9$, negated_conjecture)
ssList(sk_6) or nil = sk_4 cnf($\mathrm{co1}_{10}$, negated_conjecture)
ssList(sk_7) or nil = sk_4 cnf($\mathrm{co1}_{11}$, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_4 cnf($\mathrm{co1}_{12}$, negated_conjecture)
app(app(sk_6, sk_3), sk_7) = sk_4 or nil = sk_4 cnf($\mathrm{co1}_{13}$, negated_conjecture)
(ssItem(a) and memberP(sk_6, a) and lt(sk_5, a)) $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{14}$, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and lt(a, sk_5)) $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{15}$, negated_conjecture)
ssList(sk_6) or nil = sk_3 cnf($\mathrm{co1}_{16}$, negated_conjecture)
ssList(sk_7) or nil = sk_3 cnf($\mathrm{co1}_{17}$, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_3 cnf($\mathrm{co1}_{18}$, negated_conjecture)
app(app(sk_6, sk_3), sk_7) = sk_4 or nil = sk_3 cnf($\mathrm{co1}_{19}$, negated_conjecture)
(ssItem(a) and memberP(sk_6, a) and lt(sk_5, a)) $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_{20}$, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and lt(a, sk_5)) $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_{21}$, negated_conjecture)

SWC260+1.p cond_pst_sorted1_x_pst_equal1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and $\exists z$: (ssItem(z
z and app(app(app(x_1, cons(y, nil)), cons(z, nil)), x_2) = w)))) or totalorderedP(u)))))) fof(co_1, conjecture)

SWC260-1.p cond_pst_sorted1_x_pst_equal1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{app}(\mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})), \mathrm{cons}(b, \mathrm{nil})), d) = \mathrm{sk}_3) \Rightarrow a = b$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC261+1.p cond_pst_sorted1_x_pst_equal3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow \exists z$: $(\mathrm{ssItem}(z)$ and $y \neq z$ and $\mathrm{memberP}(w, z)))$ or $\mathrm{totalorderedP}(u)))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC261-1.p cond_pst_sorted1_x_pst_equal3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_3, a)) \Rightarrow \mathrm{sk}_5 = a$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC262+1.p cond_pst_sorted1_x_pst_sorted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{totalorderedP}(w)$ or totalorde

SWC262-1.p cond_pst_sorted1_x_pst_sorted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC263+1.p cond_pst_sorted1_x_pst_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z$ w and $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $((\neg\, y \leq x_2$ and $\mathrm{memberP}(x_1, x_2))$ or $(\neg\, x_2 \leq y$ and $\mathrm{memberP}(z, x_2)))))))$ or $\mathrm{totalorderedP}(u))))$

SWC263-1.p cond_pst_sorted1_x_pst_sorted2

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_3$ and $\mathrm{ssItem}(d)$ and $\mathrm{memberP}(c, d)) \Rightarrow a \leq d$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_3$ and $\mathrm{ssItem}(d)$ and $\mathrm{memberP}(b, d)) \Rightarrow d \leq a$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC264+1.p cond_pst_sorted1_x_pst_strict_sorted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\neg\, \mathrm{strictorderedP}(w)$ or totalorde

SWC264-1.p cond_pst_sorted1_x_pst_strict_sorted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

SWC265+1.p cond_pst_sorted1_x_pst_strict_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z$ w and $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $((\neg\, \mathrm{lt}(y, x_2)$ and $\mathrm{memberP}(x_1, x_2))$ or $(\neg\, \mathrm{lt}(x_2, y)$ and $\mathrm{memberP}(z, x_2)))))))$ or $\mathrm{totalorderedP}(u)$

SWC265-1.p cond_pst_sorted1_x_pst_strict_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_3$ and $\mathrm{ssItem}(d)$ and $\mathrm{memberP}(c, d)) \Rightarrow \mathrm{lt}(a, d)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_3$ and $\mathrm{ssItem}(d)$ and $\mathrm{memberP}(b, d)) \Rightarrow \mathrm{lt}(d, a)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC266+1.p cond_pst_sorted1_x_run_eq
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\neg$ equalelen

SWC266-1.p cond_pst_sorted1_x_run_eq
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
segmentP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_7$, negated_conjecture)
equalelemsP(sk_3) cnf($\mathrm{co1}_8$, negated_conjecture)
$\neg$ totalorderedP(sk_1) cnf($\mathrm{co1}_9$, negated_conjecture)

SWC267+1.p cond_pst_sorted1_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ frontsegP(x, w) or $\neg$ equalelen

SWC267-1.p cond_pst_sorted1_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
frontsegP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_7$, negated_conjecture)
equalelemsP(sk_3) cnf($\mathrm{co1}_8$, negated_conjecture)
(ssList(a) and neq(sk_3, a) and frontsegP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ equalelemsP(a) cnf($\mathrm{co1}_9$, negated_conjecture
$\neg$ totalorderedP(sk_1) cnf($\mathrm{co1}_{10}$, negated_conjecture)

SWC268+1.p cond_pst_sorted1_x_run_eq_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\neg$ equalelen

SWC268-1.p cond_pst_sorted1_x_run_eq_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)

$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
segmentP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_7$, negated_conjecture)
equalelemsP(sk_3) cnf($\mathrm{co1}_8$, negated_conjecture)
(ssList(a) and neq(sk_3, a) and segmentP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ equalelemsP(a) cnf($\mathrm{co1}_9$, negated_conjecture
$\neg$ totalorderedP(sk_1) cnf($\mathrm{co1}_{10}$, negated_conjecture)

SWC269+1.p cond_pst_sorted1_x_run_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ frontsegP(x, w) or $\neg$ totalorde

SWC269-1.p cond_pst_sorted1_x_run_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
frontsegP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_7$, negated_conjecture)
totalorderedP(sk_3) cnf($\mathrm{co1}_8$, negated_conjecture)
(ssList(a) and neq(sk_3, a) and frontsegP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ totalorderedP(a) cnf($\mathrm{co1}_9$, negated_conjectu
$\neg$ totalorderedP(sk_1) cnf($\mathrm{co1}_{10}$, negated_conjecture)

SWC270+1.p cond_pst_sorted1_x_run_strict_ord
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\neg$ strictorde

SWC270-1.p cond_pst_sorted1_x_run_strict_ord
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
segmentP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_7$, negated_conjecture)
strictorderedP(sk_3) cnf($\mathrm{co1}_8$, negated_conjecture)
$\neg$ totalorderedP(sk_1) cnf($\mathrm{co1}_9$, negated_conjecture)

SWC271+1.p cond_pst_sorted1_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ frontsegP(x, w) or $\neg$ strictorde

SWC271-1.p cond_pst_sorted1_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')

$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{frontsegP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{strictorderedP}(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjectu}$
$\neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC272+1.p cond_pst_sorted1_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\forall y$: $(\neg\, \mathrm{ssList}(y)$ or $\mathrm{app}(w, y) \neq$ x or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $\exists x_3$: (w and $\mathrm{lt}(x_2, z))))))$ or $\mathrm{totalorderedP}(u)$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w)))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC272-1.p cond_pst_sorted1_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, \mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC273+1.p cond_pst_sorted1_x_run_strict_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\neg\, \mathrm{segmentP}(x, w)$ or $\neg\, \mathrm{strictorde}$

SWC273-1.p cond_pst_sorted1_x_run_strict_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{segmentP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{strictorderedP}(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjectu}$
$\neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC274+1.p cond_pst_sorted1_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ $\forall z$: ($\neg$ ssList(z) or app(app(y, w), z) $\neq x$ or $\neg$ strictorderedP(w) or $\exists x_1$: (ssItem(x_1) and $\exists x_2$: (ssList(x_2) and app(x_2, cons(x_1 y and $\exists x_3$: (ssItem(x_3) and $\exists x_4$: (ssList(x_4) and app(cons(x_3, nil), x_4) = w and lt(x_1, x_3))))) or $\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ss z and $\exists x_7$: (ssItem(x_7) and $\exists x_8$: (ssList(x_8) and app(x_8, cons(x_7, nil)) = w and lt(x_7, x_5))))))) or totalorderedP(u) or (nil $\neq$ x and nil = w))))) fof(co$_1$, conjecture)

SWC274-1.p cond_pst_sorted1_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
ssList(sk$_5$) cnf(co1$_7$, negated_conjecture)
ssList(sk$_6$) cnf(co1$_8$, negated_conjecture)
app(app(sk$_5$, sk$_3$), sk$_6$) = sk$_4$ cnf(co1$_9$, negated_conjecture)
strictorderedP(sk$_3$) cnf(co1$_{10}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk$_5$ and ssItem(c) and ssList(d) and app(cons(c, nil), d) = sk$_3$) $\Rightarrow$ $\neg$ lt(a, c) cnf(co1$_{11}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk$_6$ and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk$_3$) $\Rightarrow$ $\neg$ lt(c, a) cnf(co1$_{12}$, negated_conjecture)
$\neg$ totalorderedP(sk$_1$) cnf(co1$_{13}$, negated_conjecture)
nil = sk$_3$ $\Rightarrow$ nil = sk$_4$ cnf(co1$_{14}$, negated_conjecture)

SWC275+1.p cond_pst_sorted1_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or totalorderedP(u) or (nil $\neq$ w and nil = x) or ($\forall y$: ($\neg$ ssItem(y) or cons(y, nil) $\neq w$ or $\neg$ memberP(x, y)) and neq(x, nil)))))) fof(co$_1$, conjecture)

SWC275-1.p cond_pst_sorted1_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
$\neg$ totalorderedP(sk$_1$) cnf(co1$_7$, negated_conjecture)
nil = sk$_4$ $\Rightarrow$ nil = sk$_3$ cnf(co1$_8$, negated_conjecture)
neq(sk$_4$, nil) $\Rightarrow$ ssItem(sk$_5$) cnf(co1$_9$, negated_conjecture)
neq(sk$_4$, nil) $\Rightarrow$ cons(sk$_5$, nil) = sk$_3$ cnf(co1$_{10}$, negated_conjecture)
neq(sk$_4$, nil) $\Rightarrow$ memberP(sk$_4$, sk$_5$) cnf(co1$_{11}$, negated_conjecture)

SWC276+1.p cond_pst_sorted1_x_some_total2

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or totalorderedP(u) or ($\forall y$: (ssIten
(cons(y, nil) $\neq w$ or $\neg$ memberP(x, y))) and (nil $\neq x$ or nil $\neq w$))))))) fof(co_1, conjecture)

SWC276-1.p cond_pst_sorted1_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
$\neg$ totalorderedP(sk_1) cnf(co1_7, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_4$ cnf(co1_8, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_3$ cnf(co1_9, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_4$ cnf(co1_{10}, negated_conjecture)
memberP(sk_4, sk_5) or nil $= \text{sk}_4$ cnf(co1_{11}, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_3$ cnf(co1_{12}, negated_conjecture)
memberP(sk_4, sk_5) or nil $= \text{sk}_3$ cnf(co1_{13}, negated_conjecture)

SWC277+1.p cond_pst_sorted1_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or totalordere

SWC277-1.p cond_pst_sorted1_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
segmentP(sk_4, sk_3) cnf(co1_7, negated_conjecture)
$\neg$ totalorderedP(sk_1) cnf(co1_8, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ singletonP(sk_3) cnf(co1_9, negated_conjecture)

SWC278+1.p cond_pst_sorted2_x_pst_equal1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and $\exists z$: (ssItem(z
z and app(app(app(x_1, cons(y, nil)), cons(z, nil)), x_2) $= w$)))) or $\forall x_3$: (ssItem(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $\Rightarrow$ $\forall x_5$: (ssList(x_5) $\Rightarrow$
(app(app(x_4, cons(x_3, nil)), x_5) $\neq u$ or $\forall x_6$: (ssItem(x_6) $\Rightarrow$ (($\neg$ memberP(x_4, x_6) or $x_6 \leq x_3$) and ($\neg$ memberP(x_5, x_6) or x_3
x_6)))))))))))) fof(co_1, conjecture)

SWC278-1.p cond_pst_sorted2_x_pst_equal1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.

include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{app}(\mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})), \mathrm{cons}(b, \mathrm{nil})), d) = \mathrm{sk}_3) \Rightarrow a = b$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_7) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_6, \mathrm{sk}_8)$ or $\mathrm{memberP}(\mathrm{sk}_7, \mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_8 \Rightarrow \mathrm{memberP}(\mathrm{sk}_6, \mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_8 \leq \mathrm{sk}_5 \Rightarrow \mathrm{memberP}(\mathrm{sk}_7, \mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_8 \leq \mathrm{sk}_5 \Rightarrow \neg\, \mathrm{sk}_5 \leq \mathrm{sk}_8$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$

SWC279+1.p cond_pst_sorted2_x_pst_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z$ w and $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $((\neg\, y \leq x_2$ and $\mathrm{memberP}(x_1, x_2))$ or $(\neg\, x_2 \leq y$ and $\mathrm{memberP}(z, x_2)))))))$ or $\forall x_3$: $(\mathrm{ssItem}(x_3) \Rightarrow$ $\forall x_4$: $(\mathrm{ssList}(x_4) \Rightarrow \forall x_5$: $(\mathrm{ssList}(x_5) \Rightarrow (\mathrm{app}(\mathrm{app}(x_4, \mathrm{cons}(x_3, \mathrm{nil})), x_5) \neq u$ or $\forall x_6$: $(\mathrm{ssItem}(x_6) \Rightarrow ((\neg\, \mathrm{memberP}(x_4, x_6)$ or $x_3)$ and $(\neg\, \mathrm{memberP}(x_5, x_6)$ or $x_3 \leq x_6)))))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC279-1.p cond_pst_sorted2_x_pst_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_3$ and $\mathrm{ssItem}(d)$ and $\mathrm{memberP}(c, d)) \Rightarrow a \leq d$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_3$ and $\mathrm{ssItem}(d)$ and $\mathrm{memberP}(b, d)) \Rightarrow d \leq a$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_7) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_6, \mathrm{sk}_8)$ or $\mathrm{memberP}(\mathrm{sk}_7, \mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_8 \Rightarrow \mathrm{memberP}(\mathrm{sk}_6, \mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_8 \leq \mathrm{sk}_5 \Rightarrow \mathrm{memberP}(\mathrm{sk}_7, \mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_8 \leq \mathrm{sk}_5 \Rightarrow \neg\, \mathrm{sk}_5 \leq \mathrm{sk}_8$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

SWC280+1.p cond_pst_sorted2_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$ $(\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{equalelemsP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$

$w)))))$ or $\forall x_3$: (ssItem(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $\Rightarrow$ $\forall x_5$: (ssList(x_5) $\Rightarrow$ (app(app(x_4, cons(x_3, nil)), x_5) $\neq$ u or $\forall x_6$: (ssItem(x_6) $\Rightarrow$ (($\neg$ memberP(x_4, x_6) or $x_6 \leq x_3$) and ($\neg$ memberP(x_5, x_6) or $x_3 \leq x_6$))))))) or (nil $\neq$ x and nil = w)))))) fof(co$_1$, conjecture)

SWC280-1.p cond_pst_sorted2_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
ssList(sk$_5$) cnf(co1$_7$, negated_conjecture)
app(sk$_3$, sk$_5$) = sk$_4$ cnf(co1$_8$, negated_conjecture)
equalelemsP(sk$_3$) cnf(co1$_9$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk$_5$ and ssList(c)) $\Rightarrow$ app(c, cons(a, nil)) $\neq$ sk$_3$ cnf(co1$_{10}$, negated_con
ssItem(sk$_6$) cnf(co1$_{11}$, negated_conjecture)
ssList(sk$_7$) cnf(co1$_{12}$, negated_conjecture)
ssList(sk$_8$) cnf(co1$_{13}$, negated_conjecture)
app(app(sk$_7$, cons(sk$_6$, nil)), sk$_8$) = sk$_1$ cnf(co1$_{14}$, negated_conjecture)
ssItem(sk$_9$) cnf(co1$_{15}$, negated_conjecture)
memberP(sk$_7$, sk$_9$) or memberP(sk$_8$, sk$_9$) cnf(co1$_{16}$, negated_conjecture)
sk$_6 \leq$ sk$_9$ $\Rightarrow$ memberP(sk$_7$, sk$_9$) cnf(co1$_{17}$, negated_conjecture)
sk$_9 \leq$ sk$_6$ $\Rightarrow$ memberP(sk$_8$, sk$_9$) cnf(co1$_{18}$, negated_conjecture)
sk$_9 \leq$ sk$_6$ $\Rightarrow$ $\neg$ sk$_6 \leq$ sk$_9$ cnf(co1$_{19}$, negated_conjecture)
nil = sk$_3$ $\Rightarrow$ nil = sk$_4$ cnf(co1$_{20}$, negated_conjecture)

SWC281+1.p cond_pst_sorted2_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ (app(w, y) $\neq x$ or $\neg$ totalorderedP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) = y and $\exists x_2$: (ssItem(x w and $x_2 \leq z$))))))) or $\forall x_4$: (ssItem(x_4) $\Rightarrow$ $\forall x_5$: (ssList(x_5) $\Rightarrow$ $\forall x_6$: (ssList(x_6) $\Rightarrow$ (app(app(x_5, cons(x_4, nil)), x_6) $\neq$ u or $\forall x_7$: (ssItem(x_7) $\Rightarrow$ (($\neg$ memberP(x_5, x_7) or $x_7 \leq x_4$) and ($\neg$ memberP(x_6, x_7) or $x_4 \leq x_7$))))))) or (nil $\neq$ x and nil = w)))))) fof(co$_1$, conjecture)

SWC281-1.p cond_pst_sorted2_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
ssList(sk$_5$) cnf(co1$_7$, negated_conjecture)
app(sk$_3$, sk$_5$) = sk$_4$ cnf(co1$_8$, negated_conjecture)
totalorderedP(sk$_3$) cnf(co1$_9$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk$_5$ and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk$_3$) $\Rightarrow$ $\neg$ $c \leq a$ cnf(co1$_{10}$, negated_conjecture)
ssItem(sk$_6$) cnf(co1$_{11}$, negated_conjecture)
ssList(sk$_7$) cnf(co1$_{12}$, negated_conjecture)
ssList(sk$_8$) cnf(co1$_{13}$, negated_conjecture)
app(app(sk$_7$, cons(sk$_6$, nil)), sk$_8$) = sk$_1$ cnf(co1$_{14}$, negated_conjecture)

$\mathrm{ssItem}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_7, \mathrm{sk}_9)$ or $\mathrm{memberP}(\mathrm{sk}_8, \mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_6 \leq \mathrm{sk}_9 \Rightarrow \mathrm{memberP}(\mathrm{sk}_7, \mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_9 \leq \mathrm{sk}_6 \Rightarrow \mathrm{memberP}(\mathrm{sk}_8, \mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_9 \leq \mathrm{sk}_6 \Rightarrow \neg\, \mathrm{sk}_6 \leq \mathrm{sk}_9$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$

SWC282+1.p cond_pst_sorted2_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\forall y$: ($\mathrm{ssList}(y) \Rightarrow$ $\forall z$: ($\neg\, \mathrm{ssList}(z)$ or $\mathrm{app}(\mathrm{app}(y, w), z) \neq x$ or $\neg\, \mathrm{totalorderedP}(w)$ or $\exists x_1$: ($\mathrm{ssItem}(x_1)$ and $\exists x_2$: ($\mathrm{ssList}(x_2)$ and $\mathrm{app}(x_2, \mathrm{cons}(x_1$ y and $\exists x_3$: ($\mathrm{ssItem}(x_3)$ and $\exists x_4$: ($\mathrm{ssList}(x_4)$ and $\mathrm{app}(\mathrm{cons}(x_3, \mathrm{nil}), x_4) = w$ and $x_1 \leq x_3$)))) or $\exists x_5$: ($\mathrm{ssItem}(x_5)$ and $\exists x_6$: (ssI z and $\exists x_7$: ($\mathrm{ssItem}(x_7)$ and $\exists x_8$: ($\mathrm{ssList}(x_8)$ and $\mathrm{app}(x_8, \mathrm{cons}(x_7, \mathrm{nil})) = w$ and $x_7 \leq x_5$)))))) or $\forall x_9$: ($\mathrm{ssItem}(x_9) \Rightarrow$ $\forall x_{10}$: ($\mathrm{ssList}(x_{10}) \Rightarrow \forall x_{11}$: ($\neg\, \mathrm{ssList}(x_{11})$ or $\mathrm{app}(\mathrm{app}(x_{10}, \mathrm{cons}(x_9, \mathrm{nil})), x_{11}) \neq u$ or $\forall x_{12}$: ($\mathrm{ssItem}(x_{12}) \Rightarrow ((\neg\, \mathrm{memberP}(x_{10}$ x_9) and ($\neg\, \mathrm{memberP}(x_{11}, x_{12})$ or $x_9 \leq x_{12}$)))))) or ($\mathrm{nil} \neq x$ and $\mathrm{nil} = w$))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC282-1.p cond_pst_sorted2_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_3), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
($\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{cons}(c, \mathrm{nil}), d) = \mathrm{sk}_3) \Rightarrow$ $\neg\, a \leq c$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
($\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$ $\neg\, c \leq a$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_8, \mathrm{cons}(\mathrm{sk}_7, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_8, \mathrm{sk}_{10})$ or $\mathrm{memberP}(\mathrm{sk}_9, \mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_7 \leq \mathrm{sk}_{10} \Rightarrow \mathrm{memberP}(\mathrm{sk}_8, \mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_{10} \leq \mathrm{sk}_7 \Rightarrow \mathrm{memberP}(\mathrm{sk}_9, \mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_{10} \leq \mathrm{sk}_7 \Rightarrow \neg\, \mathrm{sk}_7 \leq \mathrm{sk}_{10}$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{22}, \mathrm{negated\_conjecture})$

SWC283+1.p cond_pst_sorted2_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: ($\mathrm{ssList}(y) \Rightarrow$ ($\mathrm{app}(w, y) \neq x$ or $\neg\, \mathrm{strictorderedP}(w)$ or $\exists z$: ($\mathrm{ssItem}(z)$ and $\exists x_1$: ($\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: ($\mathrm{ssItem}(z$ w and $\mathrm{lt}(x_2, z)$))))))) or $\forall x_4$: ($\mathrm{ssItem}(x_4) \Rightarrow \forall x_5$: ($\mathrm{ssList}(x_5) \Rightarrow \forall x_6$: ($\mathrm{ssList}(x_6) \Rightarrow (\mathrm{app}(\mathrm{app}(x_5, \mathrm{cons}(x_4, \mathrm{nil})), x_6) \neq$ u or $\forall x_7$: ($\mathrm{ssItem}(x_7) \Rightarrow ((\neg\, \mathrm{memberP}(x_5, x_7)$ or $x_7 \leq x_4)$ and $(\neg\, \mathrm{memberP}(x_6, x_7)$ or $x_4 \leq x_7$)))))))) or ($\mathrm{nil} \neq$ x and $\mathrm{nil} = w$)))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC283-1.p cond_pst_sorted2_x_run_strict_ord_front2

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow \neg\, \mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_8) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_7, \mathrm{sk}_9)$ or $\mathrm{memberP}(\mathrm{sk}_8, \mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_6 \leq \mathrm{sk}_9 \Rightarrow \mathrm{memberP}(\mathrm{sk}_7, \mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_9 \leq \mathrm{sk}_6 \Rightarrow \mathrm{memberP}(\mathrm{sk}_8, \mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_9 \leq \mathrm{sk}_6 \Rightarrow \neg\, \mathrm{sk}_6 \leq \mathrm{sk}_9$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$

SWC284+1.p cond_pst_sorted2_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow \forall z$: $(\mathrm{ssList}(z) \Rightarrow \forall x_1$: $(\neg\, \mathrm{ssList}(x_1)$ or $\mathrm{app}(\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})), x_1) \neq u$ or $\forall x_2$: $(\mathrm{ssItem}(x_2) \Rightarrow ((\neg\, \mathrm{memberP}(z, x_2)$ or $x_2 \leq y)$ and $(\neg\, \mathrm{memberP}(x_1, x_2)$ or $y \leq x_2))))))$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $(\forall x_3$: $(\neg\, \mathrm{ssItem}(x_3)$ or $\mathrm{cons}(x_3, \mathrm{nil}) \neq w$ or $\neg$ member

SWC284-1.p cond_pst_sorted2_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_7) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_6, \mathrm{sk}_8)$ or $\mathrm{memberP}(\mathrm{sk}_7, \mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_5 \leq \mathrm{sk}_8 \Rightarrow \mathrm{memberP}(\mathrm{sk}_6, \mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_8 \leq \mathrm{sk}_5 \Rightarrow \mathrm{memberP}(\mathrm{sk}_7, \mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{sk}_8 \leq \mathrm{sk}_5 \Rightarrow \neg\, \mathrm{sk}_5 \leq \mathrm{sk}_8$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$

SWC285+1.p cond_pst_sorted2_x_some_total3

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\forall y$: (ssItem
$\forall z$: (ssList(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ (app(app(z, cons(y, nil)), x_1) $\neq u$ or $\forall x_2$: (ssItem(x_2) $\Rightarrow$ (($\neg$ memberP(z, x_2) or $x_2 \leq$
y) and ($\neg$ memberP(x_1, x_2) or $y \leq x_2$))))))) or ($\neg$ singletonP(w) and neq(x, nil))))))) fof(co_1, conjecture)

SWC285-1.p cond_pst_sorted2_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
segmentP(sk_4, sk_3) cnf(co1_7, negated_conjecture)
ssItem(sk_5) cnf(co1_8, negated_conjecture)
ssList(sk_6) cnf(co1_9, negated_conjecture)
ssList(sk_7) cnf(co1_{10}, negated_conjecture)
app(app(sk_6, cons(sk_5, nil)), sk_7) = sk_1 cnf(co1_{11}, negated_conjecture)
ssItem(sk_8) cnf(co1_{12}, negated_conjecture)
memberP(sk_6, sk_8) or memberP(sk_7, sk_8) cnf(co1_{13}, negated_conjecture)
$\text{sk}_5 \leq \text{sk}_8$ $\Rightarrow$ memberP(sk_6, sk_8) cnf(co1_{14}, negated_conjecture)
$\text{sk}_8 \leq \text{sk}_5$ $\Rightarrow$ memberP(sk_7, sk_8) cnf(co1_{15}, negated_conjecture)
$\text{sk}_8 \leq \text{sk}_5$ $\Rightarrow$ $\neg\, \text{sk}_5 \leq \text{sk}_8$ cnf(co1_{16}, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ singletonP(sk_3) cnf(co1_{17}, negated_conjecture)

SWC286+1.p cond_pst_strict_sorted1_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or strictorderedP(u) or ($\forall y$: ($\neg$ ssIt
w or $\neg$ memberP(x, y) or $\exists z$: (ssItem(z) and $y \neq z$ and memberP(x, z) and $y \leq z$)) and (nil $\neq x$ or nil $\neq w$)))))) fof(co_1,

SWC286-1.p cond_pst_strict_sorted1_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
$\neg$ strictorderedP(sk_1) cnf(co1_7, negated_conjecture)
ssItem(sk_5) or nil = sk_4 cnf(co1_8, negated_conjecture)
ssItem(sk_5) or nil = sk_3 cnf(co1_9, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_4 cnf(co1_{10}, negated_conjecture)
memberP(sk_4, sk_5) or nil = sk_4 cnf(co1_{11}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\text{sk}_5 \leq a$) $\Rightarrow$ ($\text{sk}_5 = a$ or nil = sk_4) cnf(co1_{12}, negated_conjecture)
cons(sk_5, nil) = sk_3 or nil = sk_3 cnf(co1_{13}, negated_conjecture)
memberP(sk_4, sk_5) or nil = sk_3 cnf(co1_{14}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\text{sk}_5 \leq a$) $\Rightarrow$ ($\text{sk}_5 = a$ or nil = sk_3) cnf(co1_{15}, negated_conjecture)

SWC287+1.p cond_pst_strict_sorted1_x_minimal

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or strictorderedP(u) or ($\forall y$: ($\neg$ ssIt
w or $\neg$ memberP(x, y) or $\exists z$: (ssItem(z) and $y \neq z$ and memberP(x, z) and $z \leq y$)) and (nil $\neq x$ or nil $\neq w$)))))) fof(co_1,

SWC287-1.p cond_pst_strict_sorted1_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
$\neg$ strictorderedP(sk_1) cnf(co1_7, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_4$ cnf(co1_8, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_3$ cnf(co1_9, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_4$ cnf(co1_{10}, negated_conjecture)
memberP(sk_4, sk_5) or nil $= \text{sk}_4$ cnf(co1_{11}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $a \leq \text{sk}_5$) $\Rightarrow$ ($\text{sk}_5 = a$ or nil $= \text{sk}_4$) cnf(co1_{12}, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_3$ cnf(co1_{13}, negated_conjecture)
memberP(sk_4, sk_5) or nil $= \text{sk}_3$ cnf(co1_{14}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $a \leq \text{sk}_5$) $\Rightarrow$ ($\text{sk}_5 = a$ or nil $= \text{sk}_3$) cnf(co1_{15}, negated_conjecture)

SWC288+1.p cond_pst_strict_sorted1_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or strictorderedP(u) or ($\forall y$: (ssIter
$\forall z$: (ssList(z) $\Rightarrow$ $\forall x_1$: ($\neg$ ssList(x_1) or cons(y, nil) $\neq w$ or app(app(z, w), x_1) $\neq x$ or $\exists x_2$: (ssItem(x_2) and memberP(z, x_2) an
x or nil $\neq w$)))))) fof(co_1, conjecture)

SWC288-1.p cond_pst_strict_sorted1_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
$\neg$ strictorderedP(sk_1) cnf(co1_7, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_4$ cnf(co1_8, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_3$ cnf(co1_9, negated_conjecture)
ssList(sk_6) or nil $= \text{sk}_4$ cnf(co1_{10}, negated_conjecture)
ssList(sk_7) or nil $= \text{sk}_4$ cnf(co1_{11}, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_4$ cnf(co1_{12}, negated_conjecture)
app(app(sk_6, sk_3), sk_7) $= \text{sk}_4$ or nil $= \text{sk}_4$ cnf(co1_{13}, negated_conjecture)
(ssItem(a) and memberP(sk_6, a) and lt(sk_5, a)) $\Rightarrow$ nil $= \text{sk}_4$ cnf(co1_{14}, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and lt(a, sk_5)) $\Rightarrow$ nil $= \text{sk}_4$ cnf(co1_{15}, negated_conjecture)
ssList(sk_6) or nil $= \text{sk}_3$ cnf(co1_{16}, negated_conjecture)
ssList(sk_7) or nil $= \text{sk}_3$ cnf(co1_{17}, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_3$ cnf(co1_{18}, negated_conjecture)
app(app(sk_6, sk_3), sk_7) $= \text{sk}_4$ or nil $= \text{sk}_3$ cnf(co1_{19}, negated_conjecture)

(ssItem(a) and memberP(sk_6, a) and lt(sk_5, a)) $\Rightarrow$ nil $= \mathrm{sk}_3$ cnf($\mathrm{co1}_{20}$, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and lt(a, sk_5)) $\Rightarrow$ nil $= \mathrm{sk}_3$ cnf($\mathrm{co1}_{21}$, negated_conjecture)

SWC289+1.p cond_pst_strict_sorted1_x_pst_strict_sorted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ strictorderedP(w) or strictord

SWC289-1.p cond_pst_strict_sorted1_x_pst_strict_sorted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
strictorderedP(sk_3) cnf($\mathrm{co1}_7$, negated_conjecture)
$\neg$ strictorderedP(sk_1) cnf($\mathrm{co1}_8$, negated_conjecture)

SWC290+1.p cond_pst_strict_sorted1_x_pst_strict_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z
w and $\exists x_2$: (ssItem(x_2) and (($\neg$ lt(y, x_2) and memberP(x_1, x_2)) or ($\neg$ lt(x_2, y) and memberP(z, x_2))))))) or strictorderedP(u)

SWC290-1.p cond_pst_strict_sorted1_x_pst_strict_sorted2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) $=$ sk_3 and ssItem(d) and memberP(c, d)) $\Rightarrow$
lt(a, d) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) $=$ sk_3 and ssItem(d) and memberP(b, d)) $\Rightarrow$
lt(d, a) cnf($\mathrm{co1}_8$, negated_conjecture)
$\neg$ strictorderedP(sk_1) cnf($\mathrm{co1}_9$, negated_conjecture)

SWC291+1.p cond_pst_strict_sorted1_x_run_strict_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\neg$ strictorde

SWC291-1.p cond_pst_strict_sorted1_x_run_strict_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{segmentP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{strictorderedP}(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjectu}$
$\neg\, \mathrm{strictorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC292+1.p cond_pst_strict_sorted1_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\mathrm{strictorderedP}(u)$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $(\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, y)))$ and $\mathrm{neq}(x, \mathrm{nil})))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC292-1.p cond_pst_strict_sorted1_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{strictorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC293+1.p cond_pst_strict_sorted1_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\mathrm{strictorderedP}(u)$ or $(\forall y$: $(\neg\, \mathrm{ssIt}$
w or $\neg\, \mathrm{memberP}(x, y))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC293-1.p cond_pst_strict_sorted1_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{strictorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC294+1.p cond_pst_strict_sorted1_x_some_total3

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or strictorder

SWC294-1.p cond_pst_strict_sorted1_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
segmentP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_7$, negated_conjecture)
$\neg$ strictorderedP(sk_1) cnf($\mathrm{co1}_8$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ singletonP(sk_3) cnf($\mathrm{co1}_9$, negated_conjecture)

SWC295+1.p cond_pst_strict_sorted2_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: (ssList(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ (app(app(z, cons(y, nil)), x_1) $\neq u$ or $\forall x_2$: (ssItem(x_2) $\Rightarrow$ (($\neg$ memberP(z, x_2) or lt(x_2, $(\mathrm{cons}(x_3, \mathrm{nil}) \neq w$ or $\neg$ memberP(x, x_3) or $\exists x_4$: (ssItem(x_4) and $x_3 \neq x_4$ and memberP(x, x_4) and $x_3 \leq x_4$))) and (nil $\neq$ x or nil $\neq w$))))))) fof(co_1, conjecture)

SWC295-1.p cond_pst_strict_sorted2_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
ssItem(sk_5) cnf($\mathrm{co1}_7$, negated_conjecture)
ssList(sk_6) cnf($\mathrm{co1}_8$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_7) = \mathrm{sk}_1$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
ssItem(sk_8) cnf($\mathrm{co1}_{11}$, negated_conjecture)
memberP($\mathrm{sk}_6, \mathrm{sk}_8$) or memberP($\mathrm{sk}_7, \mathrm{sk}_8$) cnf($\mathrm{co1}_{12}$, negated_conjecture)
lt($\mathrm{sk}_5, \mathrm{sk}_8$) $\Rightarrow$ memberP($\mathrm{sk}_6, \mathrm{sk}_8$) cnf($\mathrm{co1}_{13}$, negated_conjecture)
lt($\mathrm{sk}_8, \mathrm{sk}_5$) $\Rightarrow$ memberP($\mathrm{sk}_7, \mathrm{sk}_8$) cnf($\mathrm{co1}_{14}$, negated_conjecture)
lt($\mathrm{sk}_8, \mathrm{sk}_5$) $\Rightarrow$ $\neg$ lt($\mathrm{sk}_5, \mathrm{sk}_8$) cnf($\mathrm{co1}_{15}$, negated_conjecture)
ssItem(sk_9) or nil $= \mathrm{sk}_4$ cnf($\mathrm{co1}_{16}$, negated_conjecture)
ssItem(sk_9) or nil $= \mathrm{sk}_3$ cnf($\mathrm{co1}_{17}$, negated_conjecture)
cons(sk_9, nil) $= \mathrm{sk}_3$ or nil $= \mathrm{sk}_4$ cnf($\mathrm{co1}_{18}$, negated_conjecture)
memberP($\mathrm{sk}_4, \mathrm{sk}_9$) or nil $= \mathrm{sk}_4$ cnf($\mathrm{co1}_{19}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\mathrm{sk}_9 \leq a$) $\Rightarrow$ ($\mathrm{sk}_9 = a$ or nil $= \mathrm{sk}_4$) cnf($\mathrm{co1}_{20}$, negated_conjecture)
cons(sk_9, nil) $= \mathrm{sk}_3$ or nil $= \mathrm{sk}_3$ cnf($\mathrm{co1}_{21}$, negated_conjecture)
memberP($\mathrm{sk}_4, \mathrm{sk}_9$) or nil $= \mathrm{sk}_3$ cnf($\mathrm{co1}_{22}$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\mathrm{sk}_9 \leq a$) $\Rightarrow$ ($\mathrm{sk}_9 = a$ or nil $= \mathrm{sk}_3$) cnf($\mathrm{co1}_{23}$, negated_conjecture)

SWC296+1.p cond_pst_strict_sorted2_x_run_strict_ord

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\neg$ strictorde
$\forall z$: (ssList(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ (app(app(z, cons(y, nil)), x_1) $\neq u$ or $\forall x_2$: (ssItem(x_2) $\Rightarrow$ (($\neg$ memberP(z, x_2) or lt(x_2,

SWC296-1.p cond_pst_strict_sorted2_x_run_strict_ord
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
segmentP(sk_4, sk_3) cnf($co1_7$, negated_conjecture)
strictorderedP(sk_3) cnf($co1_8$, negated_conjecture)
ssItem(sk_5) cnf($co1_9$, negated_conjecture)
ssList(sk_6) cnf($co1_{10}$, negated_conjecture)
ssList(sk_7) cnf($co1_{11}$, negated_conjecture)
app(app(sk_6, cons(sk_5, nil)), sk_7) = sk_1 cnf($co1_{12}$, negated_conjecture)
ssItem(sk_8) cnf($co1_{13}$, negated_conjecture)
memberP(sk_6, sk_8) or memberP(sk_7, sk_8) cnf($co1_{14}$, negated_conjecture)
lt(sk_5, sk_8) $\Rightarrow$ memberP(sk_6, sk_8) cnf($co1_{15}$, negated_conjecture)
lt(sk_8, sk_5) $\Rightarrow$ memberP(sk_7, sk_8) cnf($co1_{16}$, negated_conjecture)
lt(sk_8, sk_5) $\Rightarrow$ $\neg$ lt(sk_5, sk_8) cnf($co1_{17}$, negated_conjecture)

SWC297+1.p cond_pst_strict_sorted2_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$
$\forall z$: (ssList(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ (app(app(z, cons(y, nil)), x_1) $\neq u$ or $\forall x_2$: (ssItem(x_2) $\Rightarrow$ (($\neg$ memberP(z, x_2) or lt(x_2,
w and nil = x) or ($\forall x_3$: (ssItem(x_3) $\Rightarrow$ (cons(x_3, nil) $\neq w$ or $\neg$ memberP(x, x_3))) and neq(x, nil))))))) fof(co_1, conjecture

SWC297-1.p cond_pst_strict_sorted2_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
ssItem(sk_5) cnf($co1_7$, negated_conjecture)
ssList(sk_6) cnf($co1_8$, negated_conjecture)
ssList(sk_7) cnf($co1_9$, negated_conjecture)
app(app(sk_6, cons(sk_5, nil)), sk_7) = sk_1 cnf($co1_{10}$, negated_conjecture)
ssItem(sk_8) cnf($co1_{11}$, negated_conjecture)
memberP(sk_6, sk_8) or memberP(sk_7, sk_8) cnf($co1_{12}$, negated_conjecture)
lt(sk_5, sk_8) $\Rightarrow$ memberP(sk_6, sk_8) cnf($co1_{13}$, negated_conjecture)
lt(sk_8, sk_5) $\Rightarrow$ memberP(sk_7, sk_8) cnf($co1_{14}$, negated_conjecture)
lt(sk_8, sk_5) $\Rightarrow$ $\neg$ lt(sk_5, sk_8) cnf($co1_{15}$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($co1_{16}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_9) cnf($co1_{17}$, negated_conjecture)

$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{cons}(\mathrm{sk}_9, \mathrm{nil}) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$

SWC298+1.p cond_pst_top_sorted_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow$
$\forall z$: $(\mathrm{ssItem}(z) \Rightarrow \forall x_1$: $(\mathrm{ssList}(x_1) \Rightarrow \forall x_2$: $(\mathrm{ssList}(x_2) \Rightarrow \forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), x_2), \mathrm{cons}(z$
u or $\neg\, \mathrm{lt}(z, y)))))))$ or $(\forall x_4$: $(\mathrm{ssItem}(x_4) \Rightarrow (\mathrm{cons}(x_4, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, x_4)$ or $\exists x_5$: $(\mathrm{ssItem}(x_5)$ and $x_4 \neq$
x_5 and $\mathrm{memberP}(x, x_5)$ and $x_5 \leq x_4)))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC298-1.p cond_pst_top_sorted_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_8), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{lt}(\mathrm{sk}_6, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_{10})$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_{10})$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_{10}, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_{10})$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_{10}) \Rightarrow (\mathrm{sk}_{10} = a$ or $\mathrm{nil} = \mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_{10}, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_{10})$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_{10}) \Rightarrow (\mathrm{sk}_{10} = a$ or $\mathrm{nil} = \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$

SWC299+1.p cond_pst_top_sorted_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow$
$\forall z$: $(\mathrm{ssItem}(z) \Rightarrow \forall x_1$: $(\mathrm{ssList}(x_1) \Rightarrow \forall x_2$: $(\mathrm{ssList}(x_2) \Rightarrow \forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), x_2), \mathrm{cons}(z$
u or $\neg\, \mathrm{lt}(z, y)))))))$ or $(\forall x_4$: $(\mathrm{ssItem}(x_4) \Rightarrow \forall x_5$: $(\mathrm{ssList}(x_5) \Rightarrow \forall x_6$: $(\mathrm{ssList}(x_6) \Rightarrow (\mathrm{cons}(x_4, \mathrm{nil}) \neq w$ or $\mathrm{app}(\mathrm{app}(x_5, w), x_6$
x or $\exists x_7$: $(\mathrm{ssItem}(x_7)$ and $\mathrm{memberP}(x_5, x_7)$ and $\mathrm{lt}(x_4, x_7))$ or $\exists x_8$: $(\mathrm{ssItem}(x_8)$ and $\mathrm{memberP}(x_6, x_8)$ and $\mathrm{lt}(x_8, x_4)))))))$ and
x or $\mathrm{nil} \neq w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC299-1.p cond_pst_top_sorted_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$

$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
ssItem(sk_5) cnf($\mathrm{co1}_7$, negated_conjecture)
ssItem(sk_6) cnf($\mathrm{co1}_8$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_9$, negated_conjecture)
ssList(sk_8) cnf($\mathrm{co1}_{10}$, negated_conjecture)
ssList(sk_9) cnf($\mathrm{co1}_{11}$, negated_conjecture)
app(app(app(app(sk_7, cons(sk_5, nil)), sk_8), cons(sk_6, nil)), sk_9) = sk_1 cnf($\mathrm{co1}_{12}$, negated_conjecture)
lt(sk_6, sk_5) cnf($\mathrm{co1}_{13}$, negated_conjecture)
ssItem(sk_{10}) or nil = sk_4 cnf($\mathrm{co1}_{14}$, negated_conjecture)
ssItem(sk_{10}) or nil = sk_3 cnf($\mathrm{co1}_{15}$, negated_conjecture)
ssList(sk_{11}) or nil = sk_4 cnf($\mathrm{co1}_{16}$, negated_conjecture)
ssList(sk_{12}) or nil = sk_4 cnf($\mathrm{co1}_{17}$, negated_conjecture)
cons(sk_{10}, nil) = sk_3 or nil = sk_4 cnf($\mathrm{co1}_{18}$, negated_conjecture)
app(app(sk_{11}, sk_3), sk_{12}) = sk_4 or nil = sk_4 cnf($\mathrm{co1}_{19}$, negated_conjecture)
(ssItem(a) and memberP(sk_{11}, a) and lt(sk_{10}, a)) $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{20}$, negated_conjecture)
(ssItem(a) and memberP(sk_{12}, a) and lt(a, sk_{10})) $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{21}$, negated_conjecture)
ssList(sk_{11}) or nil = sk_3 cnf($\mathrm{co1}_{22}$, negated_conjecture)
ssList(sk_{12}) or nil = sk_3 cnf($\mathrm{co1}_{23}$, negated_conjecture)
cons(sk_{10}, nil) = sk_3 or nil = sk_3 cnf($\mathrm{co1}_{24}$, negated_conjecture)
app(app(sk_{11}, sk_3), sk_{12}) = sk_4 or nil = sk_3 cnf($\mathrm{co1}_{25}$, negated_conjecture)
(ssItem(a) and memberP(sk_{11}, a) and lt(sk_{10}, a)) $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_{26}$, negated_conjecture)
(ssItem(a) and memberP(sk_{12}, a) and lt(a, sk_{10})) $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_{27}$, negated_conjecture)

SWC300+1.p cond_pst_top_sorted_x_pst_sorted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ totalorderedP(w) or $\forall y$: (ssIte
$\forall z$: (ssItem(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ $\forall x_3$: (ssList(x_3) $\Rightarrow$ (app(app(app(app(x_1, cons(y, nil)), x_2), cons(
u or $\neg$ lt(z, y)))))))))))) fof(co_1, conjecture)

SWC300-1.p cond_pst_top_sorted_x_pst_sorted1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
totalorderedP(sk_3) cnf($\mathrm{co1}_7$, negated_conjecture)
ssItem(sk_5) cnf($\mathrm{co1}_8$, negated_conjecture)
ssItem(sk_6) cnf($\mathrm{co1}_9$, negated_conjecture)
ssList(sk_7) cnf($\mathrm{co1}_{10}$, negated_conjecture)
ssList(sk_8) cnf($\mathrm{co1}_{11}$, negated_conjecture)
ssList(sk_9) cnf($\mathrm{co1}_{12}$, negated_conjecture)
app(app(app(app(sk_7, cons(sk_5, nil)), sk_8), cons(sk_6, nil)), sk_9) = sk_1 cnf($\mathrm{co1}_{13}$, negated_conjecture)
lt(sk_6, sk_5) cnf($\mathrm{co1}_{14}$, negated_conjecture)

SWC301+1.p cond_pst_top_sorted_x_run_eq
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\neg$ equalelen
$\forall z$: (ssItem(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ $\forall x_3$: (ssList(x_3) $\Rightarrow$ (app(app(app(app(x_1, cons(y, nil)), x_2), cons(
u or $\neg$ lt(z, y)))))))))))) fof(co_1, conjecture)

SWC301-1.p cond_pst_top_sorted_x_run_eq
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_8), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{lt}(\mathrm{sk}_6, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC302+1.p cond_pst_top_sorted_x_run_ord
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{segmentP}(x, w)$ or $\neg\, \mathrm{totalorde$
$\forall z$: $(\mathrm{ssItem}(z) \Rightarrow \forall x_1$: $(\mathrm{ssList}(x_1) \Rightarrow \forall x_2$: $(\mathrm{ssList}(x_2) \Rightarrow \forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), x_2), \mathrm{cons}(x$
u or $\neg\, \mathrm{lt}(z, y)))))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC302-1.p cond_pst_top_sorted_x_run_ord
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_8), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{lt}(\mathrm{sk}_6, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC303+1.p cond_pst_top_sorted_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $x \neq v$ or $w \neq u$ or $\forall y$: $(\neg\, \mathrm{ssList}(y)$ or $\mathrm{app}(w, y) \neq$
x or $\neg\, \mathrm{totalorderedP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $\exists x_3$: $($
w and $x_2 \leq z)))))$ or $\forall x_4$: $(\mathrm{ssItem}(x_4) \Rightarrow \forall x_5$: $(\mathrm{ssItem}(x_5) \Rightarrow \forall x_6$: $(\mathrm{ssList}(x_6) \Rightarrow \forall x_7$: $(\mathrm{ssList}(x_7) \Rightarrow$
$\forall x_8$: $(\neg\, \mathrm{ssList}(x_8)$ or $\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_6, \mathrm{cons}(x_4, \mathrm{nil})), x_7), \mathrm{cons}(x_5, \mathrm{nil})), x_8) \neq u$ or $\neg\, \mathrm{lt}(x_5, x_4))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} =$
$w)))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC303-1.p cond_pst_top_sorted_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_4 = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_3 = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, c \leq a$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_8, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9), \mathrm{cons}(\mathrm{sk}_7, \mathrm{nil})), \mathrm{sk}_{10}) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{lt}(\mathrm{sk}_7, \mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC304+1.p cond_pst_top_sorted_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: ($\mathrm{ssList}(y) \Rightarrow$
$\forall z$: ($\mathrm{ssList}(z) \Rightarrow$ ($\mathrm{app}(\mathrm{app}(y, w), z) \neq x$ or $\neg\, \mathrm{totalorderedP}(w)$ or $\exists x_1$: ($\mathrm{ssItem}(x_1)$ and $\exists x_2$: ($\mathrm{ssList}(x_2)$ and $\mathrm{app}(x_2, \mathrm{cons}(x_1$
y and $\exists x_3$: ($\mathrm{ssItem}(x_3)$ and $\exists x_4$: ($\mathrm{ssList}(x_4)$ and $\mathrm{app}(\mathrm{cons}(x_3, \mathrm{nil}), x_4) = w$ and $x_1 \leq x_3$)))) or $\exists x_5$: ($\mathrm{ssItem}(x_5)$ and $\exists x_6$: (ssI
z and $\exists x_7$: ($\mathrm{ssItem}(x_7)$ and $\exists x_8$: ($\mathrm{ssList}(x_8)$ and $\mathrm{app}(x_8, \mathrm{cons}(x_7, \mathrm{nil})) = w$ and $x_7 \leq x_5$)))))))) or $\forall x_9$: ($\mathrm{ssItem}(x_9) \Rightarrow$
$\forall x_{10}$: ($\mathrm{ssItem}(x_{10}) \Rightarrow \forall x_{11}$: ($\mathrm{ssList}(x_{11}) \Rightarrow \forall x_{12}$: ($\mathrm{ssList}(x_{12}) \Rightarrow \forall x_{13}$: ($\mathrm{ssList}(x_{13}) \Rightarrow$ ($\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_{11}, \mathrm{cons}(x_9, \mathrm{nil})$
u or $\neg\, \mathrm{lt}(x_{10}, x_9)))))))) or ($\mathrm{nil} \neq x$ and $\mathrm{nil} = w$)))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC304-1.p cond_pst_top_sorted_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_3), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{cons}(c, \mathrm{nil}), d) = \mathrm{sk}_3) \Rightarrow$
$\neg\, a \leq c$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, c \leq a$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_{10})$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$

$\mathrm{ssList}(\mathrm{sk}_{11})$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_9, \mathrm{cons}(\mathrm{sk}_7, \mathrm{nil})), \mathrm{sk}_{10}), \mathrm{cons}(\mathrm{sk}_8, \mathrm{nil})), \mathrm{sk}_{11}) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{lt}(\mathrm{sk}_8, \mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$

SWC305+1.p cond_pst_top_sorted_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u\colon (\mathrm{ssList}(u) \Rightarrow \forall v\colon (\mathrm{ssList}(v) \Rightarrow \forall w\colon (\mathrm{ssList}(w) \Rightarrow \forall x\colon (\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\,\mathrm{frontsegP}(x, w) \text{ or } \neg\,\mathrm{strictorde}$
$\forall x_1\colon (\mathrm{ssItem}(x_1) \Rightarrow \forall x_2\colon (\mathrm{ssList}(x_2) \Rightarrow \forall x_3\colon (\mathrm{ssList}(x_3) \Rightarrow \forall x_4\colon (\mathrm{ssList}(x_4) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_2, \mathrm{cons}(z, \mathrm{nil})), x_3), \mathrm{con}$
u or $\neg\,\mathrm{lt}(x_1, z)))))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC305-1.p cond_pst_top_sorted_x_run_strict_ord_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{neq}(\mathrm{sk}_3, a) \text{ and } \mathrm{frontsegP}(\mathrm{sk}_4, a) \text{ and } \mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\,\mathrm{strictorderedP}(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjectu}$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_8), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{lt}(\mathrm{sk}_6, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$

SWC306+1.p cond_pst_top_sorted_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u\colon (\mathrm{ssList}(u) \Rightarrow \forall v\colon (\mathrm{ssList}(v) \Rightarrow \forall w\colon (\mathrm{ssList}(w) \Rightarrow \forall x\colon (\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \forall y\colon (\mathrm{ssItem}(y) \Rightarrow$
$\forall z\colon (\mathrm{ssItem}(z) \Rightarrow \forall x_1\colon (\mathrm{ssList}(x_1) \Rightarrow \forall x_2\colon (\mathrm{ssList}(x_2) \Rightarrow \forall x_3\colon (\mathrm{ssList}(x_3) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), x_2), \mathrm{cons}($
u or $\neg\,\mathrm{lt}(z, y)))))))$ or $(\forall x_4\colon (\mathrm{ssItem}(x_4) \Rightarrow (\mathrm{cons}(x_4, \mathrm{nil}) \neq w \text{ or } \neg\,\mathrm{memberP}(x, x_4)))$ and $(\mathrm{nil} \neq x \text{ or } \mathrm{nil} \neq w)))))))$ $\mathrm{fof}(\mathrm{c}$

SWC306-1.p cond_pst_top_sorted_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_8), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{lt}(\mathrm{sk}_6, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_{10}) \text{ or } \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_{10}) \text{ or } \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_{10}, \mathrm{nil}) = \mathrm{sk}_3 \text{ or } \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_{10}) \text{ or } \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_{10}, \mathrm{nil}) = \mathrm{sk}_3 \text{ or } \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_{10}) \text{ or } \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$

SWC307+1.p cond_pst_top_sorted_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{segmentP}(x, w) \text{ or } \forall y$: (ssItem
$\forall z$: $(\mathrm{ssItem}(z) \Rightarrow \forall x_1$: $(\mathrm{ssList}(x_1) \Rightarrow \forall x_2$: $(\mathrm{ssList}(x_2) \Rightarrow \forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow (\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), x_2), \mathrm{cons}(x$
$u \text{ or } \neg\, \mathrm{lt}(z, y)))))))$ or $(\neg\, \mathrm{singletonP}(w) \text{ and } \mathrm{neq}(x, \mathrm{nil})))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC307-1.p cond_pst_top_sorted_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_9)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})), \mathrm{sk}_8), \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})), \mathrm{sk}_9) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{lt}(\mathrm{sk}_6, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{singletonP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC308+1.p cond_rot_l1_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \neg\, \mathrm{neq}(v, \mathrm{nil}) \text{ or } \exists y$: $(\mathrm{ssList}(y)$ an
y and $\exists z$: $(\mathrm{ssList}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{tl}(v) = z$ and $\mathrm{app}(z, x_1) = y$ and $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $\mathrm{cons}(x_2, \mathrm{nil}) =$
x_1 and $\mathrm{hd}(v) = x_2$ and $\mathrm{neq}(\mathrm{nil}, v))$ and $\mathrm{neq}(\mathrm{nil}, v))))$ or $\exists x_3$: $(\mathrm{ssItem}(x_3)$ and $\exists x_4$: $(\mathrm{ssList}(x_4)$ and $\mathrm{app}(x_4, \mathrm{cons}(x_3, \mathrm{nil})) \neq$
w and $\mathrm{app}(\mathrm{cons}(x_3, \mathrm{nil}), x_4) = x))$ or $(\mathrm{nil} \neq w \text{ and } \mathrm{nil} = x))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC308-1.p cond_rot_l1_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$

(ssList(a) and $\mathrm{sk}_1 = a$ and ssList(b) and ssList(c) and $\mathrm{tl}(\mathrm{sk}_2) = b$ and $\mathrm{app}(b, c) = a$ and ssItem(d) and $\mathrm{cons}(d, \mathrm{nil}) = c$ and $\mathrm{hd}(\mathrm{sk}_2) = d$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_2)$) $\Rightarrow$ $\neg\, \mathrm{neq}(\mathrm{nil}, \mathrm{sk}_2)$ cnf($\mathrm{co1}_8$, negated_conjecture)
(ssItem(a) and ssList(b) and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_4$) $\Rightarrow$ $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_3$ cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_4$ $\Rightarrow$ $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{10}$, negated_conjecture)

SWC309+1.p cond_rot_l2_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: (ssItem(y) a
v and $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) = u$)) or $\exists x_1$: (ssItem(x_1) and $\exists x_2$: (ssList(x_2) and $\mathrm{app}(x_2, \mathrm{cons}(x_1, \mathrm{nil})) \neq w$ and app(cons(x_1, nil)
x)) or (nil $\neq w$ and nil $= x$)))))) fof(co_1, conjecture)

SWC309-1.p cond_rot_l2_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_1$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_2)$ cnf($\mathrm{co1}_2$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_3)$ cnf($\mathrm{co1}_3$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_4)$ cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_2$) $\Rightarrow$ $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_1$ cnf($\mathrm{co1}_8$, negated_conjecture)
(ssItem(a) and ssList(b) and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_4$) $\Rightarrow$ $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_3$ cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_4$ $\Rightarrow$ $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{10}$, negated_conjecture)

SWC310+1.p cond_rot_l_total1_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or (nil $\neq w$ and nil $=$ x) or ($\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: ($\neg$ ssList(z) or $\mathrm{app}(\mathrm{cons}(y, \mathrm{nil}), z) \neq x$ or $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) \neq w$)) and neq($x$, nil)) or (($\mathrm{nil} \neq$ v or nil $= u$) and ($\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists x_1$: (ssList(x_1) and $u = x_1$ and $\exists x_2$: (ssList(x_2) and $\exists x_3$: (ssList(x_3) and $\mathrm{tl}(v) =$ x_2 and $\mathrm{app}(x_2, x_3) = x_1$ and $\exists x_4$: (ssItem(x_4) and $\mathrm{cons}(x_4, \mathrm{nil}) = x_3$ and $\mathrm{hd}(v) = x_4$ and $\mathrm{neq}(\mathrm{nil}, v)$) and $\mathrm{neq}(\mathrm{nil}, v)$)))))))))

SWC310-1.p cond_rot_l_total1_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_1$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_2)$ cnf($\mathrm{co1}_2$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_3)$ cnf($\mathrm{co1}_3$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_4)$ cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_4$ $\Rightarrow$ $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_7$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\Rightarrow$ $\mathrm{ssItem}(\mathrm{sk}_5)$ cnf($\mathrm{co1}_8$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\Rightarrow$ $\mathrm{ssList}(\mathrm{sk}_6)$ cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\Rightarrow$ $\mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_4$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\Rightarrow$ $\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_3$ cnf($\mathrm{co1}_{11}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
(ssList(a) and $\mathrm{sk}_1 = a$ and ssList(b) and ssList(c) and $\mathrm{tl}(\mathrm{sk}_2) = b$ and $\mathrm{app}(b, c) = a$ and ssItem(d) and $\mathrm{cons}(d, \mathrm{nil}) = c$ and $\mathrm{hd}(\mathrm{sk}_2) = d$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_2)$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_2)$) $\Rightarrow$ $\mathrm{nil} = \mathrm{sk}_2$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_1$ $\Rightarrow$ $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ cnf($\mathrm{co1}_{14}$, negated_conjecture)

(nil = sk_1 and ssList(a) and $sk_1 = a$ and ssList(b) and ssList(c) and tl(sk_2) = b and app(b, c) = a and ssItem(d) and cons(d, c and hd(sk_2) = d and neq(nil, sk_2)) $\Rightarrow$ $\neg$ neq(nil, sk_2) cnf($co1_{15}$, negated_conjecture)

SWC311+1.p cond_rot_l_total2_x_rot_l_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (nil $\neq$ w and nil = x) or ($\exists y$: (ssList(y) and $w \neq y$ and $\exists z$: (ssList(z) and $\exists x_1$: (ssList(x_1) and tl(x) = z and app(z, x_1) = y and $\exists x_2$: (ssItem(x_2) and cons(x_2, nil) = x_1 and hd(x) = x_2 and neq(nil, x)) and neq(nil, x)))) and neq(x, nil)) or ((nil $\neq$ v or nil = u) and ($\neg$ neq(v, nil) or $\exists x_3$: (ssItem(x_3) and $\exists x_4$: (ssList(x_4) and app(cons(x_3, nil), x_4) = v and app(x_4, cons(x_3, n u)))))))))) fof(co_1, conjecture)

SWC311-1.p cond_rot_l_total2_x_rot_l_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($co1_7$, negated_conjecture)
(ssList(a) and ssList(b) and ssList(c) and tl(sk_4) = b and app(b, c) = a and ssItem(d) and cons(d, nil) = c and hd(sk_4) = d and neq(nil, sk_4) and neq(nil, sk_4) and neq(sk_4, nil)) $\Rightarrow$ $sk_3 = a$ cnf($co1_8$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($co1_9$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_2 and app(b, cons(a, nil)) = sk_1) $\Rightarrow$ nil = sk_2 cnf($co1_{10}$, negated_con
nil = sk_1 $\Rightarrow$ neq(sk_2, nil) cnf($co1_{11}$, negated_conjecture)
(nil = sk_1 and ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_2) $\Rightarrow$ app(b, cons(a, nil)) $\neq$ sk_1 cnf($co1_{12}$, negated_con

SWC312+1.p cond_rot_l_total2_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or (nil $\neq$ w and nil = x) or ($\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: ($\neg$ ssList(z) or app(cons(y, nil), z) $\neq$ x or app(z, cons(y, nil)) $\neq$ w)) and neq(x, nil)) or ((nil $\neq$ v or nil = u) and ($\neg$ neq(v, nil) or $\exists x_1$: (ssItem(x_1) and $\exists x_2$: (ssList(x_2) and app(cons(x_1, nil), x_2) = v and app(x_2, cons(x_1, n u)))))))) fof(co_1, conjecture)

SWC312-1.p cond_rot_l_total2_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($co1_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) cnf($co1_8$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_6) cnf($co1_9$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(cons(sk_5, nil), sk_6) = sk_4 cnf($co1_{10}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(sk_6, cons(sk_5, nil)) = sk_3 cnf($co1_{11}$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($co1_{12}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_2 and app(b, cons(a, nil)) = sk_1) $\Rightarrow$ nil = sk_2 cnf($co1_{13}$, negated_con

$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_2) \Rightarrow \mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_con}$

SWC313+1.p cond_rot_l_total2_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z$
w and $\mathrm{app}(\mathrm{cons}(y, \mathrm{nil}), z) = x))$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists x_1$: $(\mathrm{ssItem}(x_1)$ and $\exists$
v and $\mathrm{app}(x_2, \mathrm{cons}(x_1, \mathrm{nil})) = u)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC313-1.p cond_rot_l_total2_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_4) \Rightarrow \mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_2$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_1) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_con}$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_2) \Rightarrow \mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_con}$

SWC314+1.p cond_rot_l_total3_x_rot_l_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} =$
$x)$ or $(\exists y$: $(\mathrm{ssList}(y)$ and $w \neq y$ and $\exists z$: $(\mathrm{ssList}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{tl}(x) = z$ and $\mathrm{app}(z, x_1) = y$ and $\exists x_2$: $(\mathrm{ssItem}(x_2$
x_1 and $\mathrm{hd}(x) = x_2$ and $\mathrm{neq}(\mathrm{nil}, x))$ and $\mathrm{neq}(\mathrm{nil}, x))))$ and $\mathrm{neq}(x, \mathrm{nil}))$ or $(\forall x_3$: $(\mathrm{ssItem}(x_3) \Rightarrow \forall x_4$: $(\neg\, \mathrm{ssList}(x_4)$ or $\mathrm{app}(\mathrm{cons}$
v or $\mathrm{app}(x_4, \mathrm{cons}(x_3, \mathrm{nil})) = u))$ and $(\mathrm{nil} \neq v$ or $\mathrm{nil} = u))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC314-1.p cond_rot_l_total3_x_rot_l_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{tl}(\mathrm{sk}_4) = b$ and $\mathrm{app}(b, c) = a$ and $\mathrm{ssItem}(d)$ and $\mathrm{cons}(d, \mathrm{nil}) = c$ and $\mathrm{hd}(\mathrm{sk}_4) =$
d and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow \mathrm{sk}_3 = a$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_2$ or $\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_1 \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

$\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_1 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$

SWC315+1.p cond_rot_l_total3_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or ($\mathrm{nil} \neq w$ and $\mathrm{nil} = x$) or ($\forall y$: ($\mathrm{ssItem}(y) \Rightarrow \forall z$: ($\neg\, \mathrm{ssList}(z)$ or $\mathrm{app}(\mathrm{cons}(y, \mathrm{nil}), z) \neq v$ or $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) = u$)) and ($\mathrm{nil} \neq v$ or $\mathrm{nil} = u$)) or ($\forall x_1$: ($\mathrm{ssItem}(x_1) \Rightarrow \forall x_2$: ($\neg\, \mathrm{ssList}(x_2)$ or $\mathrm{app}(\mathrm{cons}(x_1, \mathrm{nil}), x_2) \neq x$ or $\mathrm{app}(x_2, \mathrm{cons}(x_1, \mathrm{nil})) \neq w$)) and $\mathrm{neq}(x, \mathrm{nil})$)))))

SWC315-1.p cond_rot_l_total3_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_2$ or $\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_1 \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_1 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_8)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_7, \mathrm{nil}), \mathrm{sk}_8) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_8, \mathrm{cons}(\mathrm{sk}_7, \mathrm{nil})) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$

SWC316+1.p cond_rot_r1_x_rot_r2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\forall y$: ($\mathrm{ssItem}(y)$
$\forall z$: ($\mathrm{ssList}(z) \Rightarrow$ ($\mathrm{app}(\mathrm{cons}(y, \mathrm{nil}), z) \neq w$ or $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) \neq x$))) or ($\exists x_1$: ($\mathrm{ssList}(x_1)$ and $v = x_1$ and $\exists x_2$: ($\mathrm{ssList}(x_2)$
x_2 and $\mathrm{app}(x_2, x_3) = x_1$ and $\exists x_4$: ($\mathrm{ssItem}(x_4)$ and $\mathrm{cons}(x_4, \mathrm{nil}) = x_3$ and $\mathrm{hd}(u) = x_4$ and $\mathrm{neq}(\mathrm{nil}, u)$) and $\mathrm{neq}(\mathrm{nil}, u)$)))) and

SWC316-1.p cond_rot_r1_x_rot_r2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

$\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
($\mathrm{ssList}(a)$ and $\mathrm{sk}_2 = a$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{tl}(\mathrm{sk}_1) = b$ and $\mathrm{app}(b, c) = a$ and $\mathrm{ssItem}(d)$ and $\mathrm{cons}(d, \mathrm{nil}) = c$ and $\mathrm{hd}(\mathrm{sk}_1) = d$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_1)$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_1)$ and $\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
($\mathrm{ssList}(a)$ and $\mathrm{sk}_2 = a$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{tl}(\mathrm{sk}_1) = b$ and $\mathrm{app}(b, c) = a$ and $\mathrm{ssItem}(d)$ and $\mathrm{cons}(d, \mathrm{nil}) = c$ and $\mathrm{hd}(\mathrm{sk}_1) = d$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_1)$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_1)$ and $\mathrm{neq}(\mathrm{sk}_1, \mathrm{nil})) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC317+1.p cond_rot_r2_x_rot_r2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or (($\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: ($\mathrm{ssItem}(y)$ u and $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) = v$)) or $\forall x_1$: ($\mathrm{ssItem}(x_1) \Rightarrow \forall x_2$: ($\mathrm{ssList}(x_2) \Rightarrow (\mathrm{app}(\mathrm{cons}(x_1, \mathrm{nil}), x_2) \neq w$ or $\mathrm{app}(x_2, \mathrm{cons}(x_1, \mathrm{ni}$ $x)))))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil}))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC317-1.p cond_rot_r2_x_rot_r2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
($\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_1$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_2) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_c}$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
($\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_1$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_2) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negate}$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC318+1.p cond_rot_r2_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: ($\mathrm{ssItem}(y)$ a u and $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) = v$)) or $\exists x_1$: ($\mathrm{ssItem}(x_1)$ and $\exists x_2$: ($\mathrm{ssList}(x_2)$ and $\mathrm{app}(\mathrm{cons}(x_1, \mathrm{nil}), x_2) \neq w$ and $\mathrm{app}(x_2, \mathrm{cons}(x_1,$ $x)$) or ($\mathrm{nil} \neq w$ and $\mathrm{nil} = x$))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC318-1.p cond_rot_r2_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$

$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_1) $\Rightarrow$ app(b, cons(a, nil)) $\neq \mathrm{sk}_2$ cnf($\mathrm{co1}_8$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk_4) $\Rightarrow$ app(cons(a, nil), b) = sk_3 cnf($\mathrm{co1}_9$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_{10}$, negated_conjecture)

SWC319+1.p cond_rot_r_total1_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and $\exists z$: (ssList(z w and app(z, cons(y, nil)) = x)) or (nil $\neq w$ and nil = x) or ((nil $\neq v$ or nil = u) and ($\neg$ neq(v, nil) or ($\exists x_1$: (ssList(x_1) and v x_1 and $\exists x_2$: (ssList(x_2) and $\exists x_3$: (ssList(x_3) and tl(u) = x_2 and app(x_2, x_3) = x_1 and $\exists x_4$: (ssItem(x_4) and cons(x_4, nil) = x_3 and hd(u) = x_4 and neq(nil, u)) and neq(nil, u)))) and neq(u, nil)))))))) fof(co_1, conjecture)

SWC319-1.p cond_rot_r_total1_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk_4) $\Rightarrow$ app(cons(a, nil), b) = sk_3 cnf($\mathrm{co1}_7$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_8$, negated_conjecture)
nil = sk_2 or neq(sk_2, nil) cnf($\mathrm{co1}_9$, negated_conjecture)
(ssList(a) and $\mathrm{sk}_2 = a$ and ssList(b) and ssList(c) and tl(sk_1) = b and app(b, c) = a and ssItem(d) and cons(d, nil) = c and hd(sk_1) = d and neq(nil, sk_1) and neq(nil, sk_1) and neq(sk_1, nil)) $\Rightarrow$ nil = sk_2 cnf($\mathrm{co1}_{10}$, negated_conjecture)
nil = sk_1 $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_{11}$, negated_conjecture)
(nil = sk_1 and ssList(a) and $\mathrm{sk}_2 = a$ and ssList(b) and ssList(c) and tl(sk_1) = b and app(b, c) = a and ssItem(d) and cons(d, c and hd(sk_1) = d and neq(nil, sk_1) and neq(nil, sk_1)) $\Rightarrow$ $\neg$ neq(sk_1, nil) cnf($\mathrm{co1}_{12}$, negated_conjecture)

SWC320+1.p cond_rot_r_total2_x_rot_r_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or (nil $\neq w$ and nil = x) or ($\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: ($\neg$ ssList(z) or app(cons(y, nil), z) $\neq w$ or app(z, cons(y, nil)) $\neq x$)) and neq(x, nil)) or ((nil $\neq$ v or nil = u) and ($\neg$ neq(v, nil) or $\exists x_1$: (ssItem(x_1) and $\exists x_2$: (ssList(x_2) and app(cons(x_1, nil), x_2) = u and app(x_2, cons(x_1, v)))))))) fof(co_1, conjecture)

SWC320-1.p cond_rot_r_total2_x_rot_r_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) cnf($\mathrm{co1}_8$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_6) cnf($\mathrm{co1}_9$, negated_conjecture)

$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_1$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_2) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_con}$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_1) \Rightarrow \mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_con}$

SWC321+1.p cond_rot_r_total2_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z$
w and $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) = x))$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists x_1$: $(\mathrm{ssItem}(x_1)$ and $\exists$
u and $\mathrm{app}(x_2, \mathrm{cons}(x_1, \mathrm{nil})) = v)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC321-1.p cond_rot_r_total2_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_4) \Rightarrow \mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_1$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_2) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_con}$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_1) \Rightarrow \mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_con}$

SWC322+1.p cond_rot_r_total3_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z$
w and $\mathrm{app}(z, \mathrm{cons}(y, \mathrm{nil})) = x))$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $(\forall x_1$: $(\mathrm{ssItem}(x_1) \Rightarrow \forall x_2$: $(\mathrm{ssList}(x_2) \Rightarrow (\mathrm{app}(x_2, \mathrm{cons}(x_1, \mathrm{nil}))$
v or $\mathrm{app}(\mathrm{cons}(x_1, \mathrm{nil}), x_2) = u)))$ and $(\mathrm{nil} \neq v$ or $\mathrm{nil} = u)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC322-1.p cond_rot_r_total3_x_rot_r_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_4) \Rightarrow \mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_2$ or $\mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_1 \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_1 \Rightarrow \mathrm{nil} \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$

SWC323+1.p cond_rotate_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssList(y) and $\exists z$: (ssList(z) v and app(z, y) $= u$)) or (nil $\neq w$ and nil $= x$) or ($\forall x_1$: (ssItem(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ (app(cons(x_1, nil), x_2) $\neq$ x or app(x_2, cons(x_1, nil)) $\neq w$))) and neq(x, nil))))))) fof(co_1, conjecture)

SWC323-1.p cond_rotate_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
(ssList(a) and ssList(b) and app(a, b) $= \mathrm{sk}_2$) $\Rightarrow$ app(b, a) $\neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC324+1.p cond_rotate_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\exists y$: (ssList(y) and $\exists z$: (ssList(z) v and app(z, y) $= u$)) or $\exists x_1$: (ssItem(x_1) and $\exists x_2$: (ssList(x_2) and app(x_2, cons(x_1, nil)) $\neq w$ and app(cons(x_1, nil), x_2) $= x$)) or (nil $\neq w$ and nil $= x$))))) fof(co_1, conjecture)

SWC324-1.p cond_rotate_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
(ssList(a) and ssList(b) and app(a, b) $= \mathrm{sk}_2$) $\Rightarrow$ app(b, a) $\neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
(ssItem(a) and ssList(b) and app(cons(a, nil), b) $= \mathrm{sk}_4$) $\Rightarrow$ app(b, cons(a, nil)) $= \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC325+1.p cond_rotate_x_rot_r_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssList(y) and $\exists z$: (ssList(z) v and app(z, y) = u)) or (nil $\neq w$ and nil = x) or ($\forall x_1$: (ssItem(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ (app(cons(x_1, nil), x_2) $\neq$ w or app(x_2, cons(x_1, nil)) $\neq x$))) and neq(x, nil))))))) fof(co_1, conjecture)

SWC325-1.p cond_rotate_x_rot_r_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
(ssList(a) and ssList(b) and app(a, b) = sk_2) $\Rightarrow$ app(b, a) $\neq sk_1$ cnf($co1_7$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($co1_8$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) cnf($co1_9$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_6) cnf($co1_{10}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(cons(sk_5, nil), sk_6) = sk_3 cnf($co1_{11}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(sk_6, cons(sk_5, nil)) = sk_4 cnf($co1_{12}$, negated_conjecture)

SWC326+1.p cond_run_eq_front2_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ frontsegP(x, w) or $\neg$ equalelem
v and $\forall x_1$: (ssItem(x_1) $\Rightarrow$ $\forall x_2$: (ssList(x_2) $\Rightarrow$ (app(cons(x_1, nil), x_2) $\neq z$ or $\forall x_3$: (ssList(x_3) $\Rightarrow$ app(x_3, cons(x_1, nil)) $\neq$
u)))) and equalelemsP(u)) and (nil $\neq u$ or nil = v))))))) fof(co_1, conjecture)

SWC326-1.p cond_run_eq_front2_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
frontsegP(sk_4, sk_3) cnf($co1_7$, negated_conjecture)
equalelemsP(sk_3) cnf($co1_8$, negated_conjecture)
(ssList(a) and neq(sk_3, a) and frontsegP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ equalelemsP(a) cnf($co1_9$, negated_conjecture
(ssList(a) and app(sk_1, a) = sk_2 and equalelemsP(sk_1)) $\Rightarrow$ (ssItem($sk_5(a)$) or nil = sk_1) cnf($co1_{10}$, negated_conjecture)
(ssList(a) and app(sk_1, a) = sk_2 and equalelemsP(sk_1) and nil = sk_2) $\Rightarrow$ ssItem($sk_5(a)$) cnf($co1_{11}$, negated_conjecture)
(ssList(a) and app(sk_1, a) = sk_2 and equalelemsP(sk_1)) $\Rightarrow$ (ssList($sk_6(a)$) or nil = sk_1) cnf($co1_{12}$, negated_conjecture)
(ssList(a) and app(sk_1, a) = sk_2 and equalelemsP(sk_1)) $\Rightarrow$ (app(cons($sk_5(a)$, nil), $sk_6(a)$) = a or nil = sk_1) cnf($co1_{13}$, neg
(ssList(a) and app(sk_1, a) = sk_2 and equalelemsP(sk_1)) $\Rightarrow$ (ssList($sk_7(a)$) or nil = sk_1) cnf($co1_{14}$, negated_conjecture)
(ssList(a) and app(sk_1, a) = sk_2 and equalelemsP(sk_1)) $\Rightarrow$ (app($sk_7(a)$, cons($sk_5(a)$, nil)) = sk_1 or nil = sk_1) cnf($co1_{15}$, n
(ssList(a) and app(sk_1, a) = sk_2 and equalelemsP(sk_1) and nil = sk_2) $\Rightarrow$ ssList($sk_6(a)$) cnf($co1_{16}$, negated_conjecture)
(ssList(a) and app(sk_1, a) = sk_2 and equalelemsP(sk_1) and nil = sk_2) $\Rightarrow$ app(cons($sk_5(a)$, nil), $sk_6(a)$) = a cnf($co1_{17}$, neg
(ssList(a) and app(sk_1, a) = sk_2 and equalelemsP(sk_1) and nil = sk_2) $\Rightarrow$ ssList($sk_7(a)$) cnf($co1_{18}$, negated_conjecture)
(ssList(a) and app(sk_1, a) = sk_2 and equalelemsP(sk_1) and nil = sk_2) $\Rightarrow$ app($sk_7(a)$, cons($sk_5(a)$, nil)) = sk_1 cnf($co1_{19}$, n

SWC327+1.p cond_run_eq_front2_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ (app(w, y) $\neq x$ or $\neg$ equalelemsP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) $= y$ and $\exists x_2$: (ssList(x_2) w))))) or (nil $\neq x$ and nil $= w$) or ($\exists x_3$: (ssList(x_3) and app(u, x_3) $= v$ and $\forall x_4$: (ssItem(x_4) $\Rightarrow$ $\forall x_5$: (ssList(x_5) $\Rightarrow$ (app(cons(x_4, nil), x_5) $\neq x_3$ or $\forall x_6$: (ssList(x_6) $\Rightarrow$ app(x_6, cons(x_4, nil)) $\neq u$)))) and equalelemsP(u)) and (nil $\neq$ u or nil $= v$))))))) fof(co$_1$, conjecture)

SWC327-1.p cond_run_eq_front2_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
ssList(sk$_5$) cnf(co1$_7$, negated_conjecture)
app(sk$_3$, sk$_5$) = sk$_4$ cnf(co1$_8$, negated_conjecture)
equalelemsP(sk$_3$) cnf(co1$_9$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk$_5$ and ssList(c)) $\Rightarrow$ app(c, cons(a, nil)) $\neq$ sk$_3$ cnf(co1$_{10}$, negated_con
nil = sk$_3$ $\Rightarrow$ nil = sk$_4$ cnf(co1$_{11}$, negated_conjecture)
(ssList(a) and app(sk$_1$, a) = sk$_2$ and equalelemsP(sk$_1$)) $\Rightarrow$ (ssItem(sk$_6$(a)) or nil = sk$_1$) cnf(co1$_{12}$, negated_conjecture)
(ssList(a) and app(sk$_1$, a) = sk$_2$ and equalelemsP(sk$_1$) and nil = sk$_2$) $\Rightarrow$ ssItem(sk$_6$(a)) cnf(co1$_{13}$, negated_conjecture)
(ssList(a) and app(sk$_1$, a) = sk$_2$ and equalelemsP(sk$_1$)) $\Rightarrow$ (ssList(sk$_7$(a)) or nil = sk$_1$) cnf(co1$_{14}$, negated_conjecture)
(ssList(a) and app(sk$_1$, a) = sk$_2$ and equalelemsP(sk$_1$)) $\Rightarrow$ (app(cons(sk$_6$(a), nil), sk$_7$(a)) = a or nil = sk$_1$) cnf(co1$_{15}$, neg
(ssList(a) and app(sk$_1$, a) = sk$_2$ and equalelemsP(sk$_1$)) $\Rightarrow$ (ssList(sk$_8$(a)) or nil = sk$_1$) cnf(co1$_{16}$, negated_conjecture)
(ssList(a) and app(sk$_1$, a) = sk$_2$ and equalelemsP(sk$_1$)) $\Rightarrow$ (app(sk$_8$(a), cons(sk$_6$(a), nil)) = sk$_1$ or nil = sk$_1$) cnf(co1$_{17}$, n
(ssList(a) and app(sk$_1$, a) = sk$_2$ and equalelemsP(sk$_1$) and nil = sk$_2$) $\Rightarrow$ ssList(sk$_7$(a)) cnf(co1$_{18}$, negated_conjecture)
(ssList(a) and app(sk$_1$, a) = sk$_2$ and equalelemsP(sk$_1$) and nil = sk$_2$) $\Rightarrow$ app(cons(sk$_6$(a), nil), sk$_7$(a)) = a cnf(co1$_{19}$, neg
(ssList(a) and app(sk$_1$, a) = sk$_2$ and equalelemsP(sk$_1$) and nil = sk$_2$) $\Rightarrow$ ssList(sk$_8$(a)) cnf(co1$_{20}$, negated_conjecture)
(ssList(a) and app(sk$_1$, a) = sk$_2$ and equalelemsP(sk$_1$) and nil = sk$_2$) $\Rightarrow$ app(sk$_8$(a), cons(sk$_6$(a), nil)) = sk$_1$ cnf(co1$_{21}$, n

SWC328+1.p cond_run_eq_x_initialize
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ (nil $\neq w$ or $v \neq x$ or $u \neq$ w or (segmentP(v, u) and equalelemsP(u))))))) fof(co$_1$, conjecture)

SWC328-1.p cond_run_eq_x_initialize
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
nil = sk$_3$ cnf(co1$_5$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_6$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_7$, negated_conjecture)
segmentP(sk$_2$, sk$_1$) $\Rightarrow$ $\neg$ equalelemsP(sk$_1$) cnf(co1$_8$, negated_conjecture)

SWC329+1.p cond_run_eq_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ($\forall y$: (ssItem(y) $\Rightarrow$ (cons(y, nil) $\neq$ w or $\neg$ memberP(x, y) or $\exists z$: (ssItem(z) and $y \neq z$ and memberP(x, z) and $y \leq z$))) and (nil $\neq$ x or nil $\neq w$)) or (segmentP(v, u) and equalelemsP(u))))))) fof(co_1, conjecture)

SWC329-1.p cond_run_eq_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_4$ cnf(co1_7, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_3$ cnf(co1_8, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_4$ cnf(co1_9, negated_conjecture)
memberP(sk_4, sk_5) or nil $= \text{sk}_4$ cnf(co1_{10}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\text{sk}_5 \leq a$) $\Rightarrow$ ($\text{sk}_5 = a$ or nil $= \text{sk}_4$) cnf(co1_{11}, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_3$ cnf(co1_{12}, negated_conjecture)
memberP(sk_4, sk_5) or nil $= \text{sk}_3$ cnf(co1_{13}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\text{sk}_5 \leq a$) $\Rightarrow$ ($\text{sk}_5 = a$ or nil $= \text{sk}_3$) cnf(co1_{14}, negated_conjecture)
segmentP(sk_2, sk_1) $\Rightarrow$ $\neg$ equalelemsP(sk_1) cnf(co1_{15}, negated_conjecture)

SWC330+1.p cond_run_eq_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or ($\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: (ssList(z) $\Rightarrow$ $\forall x_1$: ($\neg$ ssList(x_1) or cons(y, nil) $\neq w$ or app(app(z, w), x_1) $\neq x$ or $\exists x_2$: (ssItem(x_2) and memberP(z, x_2) an x or nil $\neq w$)) or (segmentP(v, u) and equalelemsP(u)))))) fof(co_1, conjecture)

SWC330-1.p cond_run_eq_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_4$ cnf(co1_7, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_3$ cnf(co1_8, negated_conjecture)
ssList(sk_6) or nil $= \text{sk}_4$ cnf(co1_9, negated_conjecture)
ssList(sk_7) or nil $= \text{sk}_4$ cnf(co1_{10}, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_4$ cnf(co1_{11}, negated_conjecture)
app(app(sk_6, sk_3), sk_7) $= \text{sk}_4$ or nil $= \text{sk}_4$ cnf(co1_{12}, negated_conjecture)
(ssItem(a) and memberP(sk_6, a) and lt(sk_5, a)) $\Rightarrow$ nil $= \text{sk}_4$ cnf(co1_{13}, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and lt(a, sk_5)) $\Rightarrow$ nil $= \text{sk}_4$ cnf(co1_{14}, negated_conjecture)
ssList(sk_6) or nil $= \text{sk}_3$ cnf(co1_{15}, negated_conjecture)
ssList(sk_7) or nil $= \text{sk}_3$ cnf(co1_{16}, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_3$ cnf(co1_{17}, negated_conjecture)
app(app(sk_6, sk_3), sk_7) $= \text{sk}_4$ or nil $= \text{sk}_3$ cnf(co1_{18}, negated_conjecture)
(ssItem(a) and memberP(sk_6, a) and lt(sk_5, a)) $\Rightarrow$ nil $= \text{sk}_3$ cnf(co1_{19}, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and lt(a, sk_5)) $\Rightarrow$ nil $= \text{sk}_3$ cnf(co1_{20}, negated_conjecture)
segmentP(sk_2, sk_1) $\Rightarrow$ $\neg$ equalelemsP(sk_1) cnf(co1_{21}, negated_conjecture)

SWC331+1.p cond_run_eq_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ (app(w, y) $\neq x$ or $\neg$ equalelemsP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) = y and $\exists x_2$: (ssList(x_2) w))))) or (nil $\neq x$ and nil = w) or (segmentP(v, u) and equalelemsP(u))))))) fof(co_1, conjecture)

SWC331-1.p cond_run_eq_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssList(sk_5) cnf(co1_7, negated_conjecture)
app(sk_3, sk_5) = sk_4 cnf(co1_8, negated_conjecture)
equalelemsP(sk_3) cnf(co1_9, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_5 and ssList(c)) $\Rightarrow$ app(c, cons(a, nil)) $\neq \text{sk}_3$ cnf(co1_{10}, negated_con
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf(co1_{11}, negated_conjecture)
segmentP(sk_2, sk_1) $\Rightarrow$ $\neg$ equalelemsP(sk_1) cnf(co1_{12}, negated_conjecture)

SWC332+1.p cond_run_eq_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or ($\neg$ singleto

SWC332-1.p cond_run_eq_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
segmentP(sk_4, sk_3) cnf(co1_7, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ singletonP(sk_3) cnf(co1_8, negated_conjecture)
segmentP(sk_2, sk_1) $\Rightarrow$ $\neg$ equalelemsP(sk_1) cnf(co1_9, negated_conjecture)

SWC333+1.p cond_run_ord_max1_x_run_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\neg$ totalorde
($\neg$ neq(u, z) or $\neg$ segmentP(v, z) or $\neg$ segmentP(z, u) or $\neg$ totalorderedP(z))) and segmentP(v, u) and totalorderedP(u)))))))

SWC333-1.p cond_run_ord_max1_x_run_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')

$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{segmentP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{totalorderedP}(a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjectu}$
$(\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ and $\mathrm{totalorderedP}(\mathrm{sk}_1)) \Rightarrow \mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ and $\mathrm{totalorderedP}(\mathrm{sk}_1)) \Rightarrow \mathrm{neq}(\mathrm{sk}_1, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ and $\mathrm{totalorderedP}(\mathrm{sk}_1)) \Rightarrow \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ and $\mathrm{totalorderedP}(\mathrm{sk}_1)) \Rightarrow \mathrm{segmentP}(\mathrm{sk}_5, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ and $\mathrm{totalorderedP}(\mathrm{sk}_1)) \Rightarrow \mathrm{totalorderedP}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC334+1.p cond_run_ord_max1_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$
$\forall z$: $(\mathrm{ssList}(z) \Rightarrow (\mathrm{app}(\mathrm{app}(y, w), z) \neq x$ or $\neg\, \mathrm{totalorderedP}(w)$ or $\exists x_1$: $(\mathrm{ssItem}(x_1)$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$ and $\mathrm{app}(x_2, \mathrm{cons}(x_1$
y and $\exists x_3$: $(\mathrm{ssItem}(x_3)$ and $\exists x_4$: $(\mathrm{ssList}(x_4)$ and $\mathrm{app}(\mathrm{cons}(x_3, \mathrm{nil}), x_4) = w$ and $x_1 \leq x_3))))$ or $\exists x_5$: $(\mathrm{ssItem}(x_5)$ and $\exists x_6$: $(\mathrm{ssI$
z and $\exists x_7$: $(\mathrm{ssItem}(x_7)$ and $\exists x_8$: $(\mathrm{ssList}(x_8)$ and $\mathrm{app}(x_8, \mathrm{cons}(x_7, \mathrm{nil})) = w$ and $x_7 \leq x_5)))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} =$
$w)$ or $(\forall x_9$: $(\mathrm{ssList}(x_9) \Rightarrow (\neg\, \mathrm{neq}(u, x_9)$ or $\neg\, \mathrm{segmentP}(v, x_9)$ or $\neg\, \mathrm{segmentP}(x_9, u)$ or $\neg\, \mathrm{totalorderedP}(x_9)))$ and $\mathrm{segmentP}($

SWC334-1.p cond_run_ord_max1_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_3), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{cons}(c, \mathrm{nil}), d) = \mathrm{sk}_3) \Rightarrow$
$\neg\, a \leq c$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, c \leq a$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ and $\mathrm{totalorderedP}(\mathrm{sk}_1)) \Rightarrow \mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ and $\mathrm{totalorderedP}(\mathrm{sk}_1)) \Rightarrow \mathrm{neq}(\mathrm{sk}_1, \mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ and $\mathrm{totalorderedP}(\mathrm{sk}_1)) \Rightarrow \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ and $\mathrm{totalorderedP}(\mathrm{sk}_1)) \Rightarrow \mathrm{segmentP}(\mathrm{sk}_7, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$(\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ and $\mathrm{totalorderedP}(\mathrm{sk}_1)) \Rightarrow \mathrm{totalorderedP}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC335+1.p cond_run_ord_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $(\forall y$: $(\mathrm{ssItem}(y) \Rightarrow$
$(\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, y)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $y \neq z$ and $\mathrm{memberP}(x, z)$ and $z \leq y)))$ and $(\mathrm{nil} \neq$
x or $\mathrm{nil} \neq w))$ or $(\mathrm{segmentP}(v, u)$ and $\mathrm{totalorderedP}(u)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC335-1.p cond_run_ord_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_5) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_5) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC336+1.p cond_run_ord_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $(\forall y$: $(\mathrm{ssItem}(y) \Rightarrow$
$\forall z$: $(\mathrm{ssList}(z) \Rightarrow \forall x_1$: $(\neg\, \mathrm{ssList}(x_1)$ or $\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\mathrm{app}(\mathrm{app}(z, w), x_1) \neq x$ or $\exists x_2$: $(\mathrm{ssItem}(x_2)$ and $\mathrm{memberP}(z, x_2)$ an
x or $\mathrm{nil} \neq w))$ or $(\mathrm{segmentP}(v, u)$ and $\mathrm{totalorderedP}(u))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC336-1.p cond_run_ord_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_6, a)$ and $\mathrm{lt}(\mathrm{sk}_5, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{lt}(a, \mathrm{sk}_5)) \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_6, a)$ and $\mathrm{lt}(\mathrm{sk}_5, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{lt}(a, \mathrm{sk}_5)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$

SWC337+1.p cond_run_ord_x_run_eq
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.

include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\neg$ equalelen

SWC337-1.p cond_run_ord_x_run_eq
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
segmentP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_7$, negated_conjecture)
equalelemsP(sk_3) cnf($\mathrm{co1}_8$, negated_conjecture)
segmentP($\mathrm{sk}_2, \mathrm{sk}_1$) $\Rightarrow$ $\neg$ totalorderedP(sk_1) cnf($\mathrm{co1}_9$, negated_conjecture)

SWC338+1.p cond_run_ord_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$
$\forall z$: (ssList(z) $\Rightarrow$ (app(app(y, w), z) $\neq x$ or $\neg$ equalelemsP(w) or $\exists x_1$: (ssItem(x_1) and $\exists x_2$: (ssList(x_2) and app(x_2, cons(x_1, n
y and $\exists x_3$: (ssList(x_3) and app(cons(x_1, nil), x_3) = w))) or $\exists x_4$: (ssItem(x_4) and $\exists x_5$: (ssList(x_5) and app(cons(x_4, nil), x_5) =
z and $\exists x_6$: (ssList(x_6) and app(x_6, cons(x_4, nil)) = w)))))) or (nil $\neq x$ and nil = w) or (segmentP(v, u) and totalorderedP(u)

SWC338-1.p cond_run_ord_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
ssList(sk_5) cnf($\mathrm{co1}_7$, negated_conjecture)
ssList(sk_6) cnf($\mathrm{co1}_8$, negated_conjecture)
app(app($\mathrm{sk}_5, \mathrm{sk}_3$), sk_6) = sk_4 cnf($\mathrm{co1}_9$, negated_conjecture)
equalelemsP(sk_3) cnf($\mathrm{co1}_{10}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk_5 and ssList(c)) $\Rightarrow$ app(cons(a, nil), c) $\neq \mathrm{sk}_3$ cnf($\mathrm{co1}_{11}$, negated_con
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_6 and ssList(c)) $\Rightarrow$ app(c, cons(a, nil)) $\neq \mathrm{sk}_3$ cnf($\mathrm{co1}_{12}$, negated_con
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{13}$, negated_conjecture)
segmentP($\mathrm{sk}_2, \mathrm{sk}_1$) $\Rightarrow$ $\neg$ totalorderedP(sk_1) cnf($\mathrm{co1}_{14}$, negated_conjecture)

SWC339+1.p cond_run_ord_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$
$\forall z$: (ssList(z) $\Rightarrow$ (app(app(y, w), z) $\neq x$ or $\neg$ totalorderedP(w) or $\exists x_1$: (ssItem(x_1) and $\exists x_2$: (ssList(x_2) and app(x_2, cons(x_1
y and $\exists x_3$: (ssItem(x_3) and $\exists x_4$: (ssList(x_4) and app(cons(x_3, nil), x_4) = w and $x_1 \leq x_3$)))) or $\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ssI
z and $\exists x_7$: (ssItem(x_7) and $\exists x_8$: (ssList(x_8) and app(x_8, cons(x_7, nil)) = w and $x_7 \leq x_5$)))))))) or (nil $\neq x$ and nil =
w) or (segmentP(v, u) and totalorderedP(u))))))) fof(co_1, conjecture)

SWC339-1.p cond_run_ord_x_run_ord_max2

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_3), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(\mathrm{cons}(c, \mathrm{nil}), d) = \mathrm{sk}_3) \Rightarrow \neg\, a \leq c$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow \neg\, c \leq a$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC340+1.p cond_run_ord_x_run_strict_ord
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{segmentP}(x, w)$ or $\neg$ strictorde

SWC340-1.p cond_run_ord_x_run_strict_ord
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC341+1.p cond_run_ord_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $(\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, y)))$ and $\mathrm{neq}(x, \mathrm{nil}))$ or $(\mathrm{segmentP}(v, u)$ and $\mathrm{totalorderedP}(u))))$

SWC341-1.p cond_run_ord_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$

$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_7$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ cnf($\mathrm{co1}_8$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_{11}$, negated_conjecture)

SWC342+1.p cond_run_ord_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ($\forall y$: (ssItem(y) $\Rightarrow$ (cons(y, nil) $\neq w$ or $\neg$ memberP(x, y))) and (nil $\neq x$ or nil $\neq w$)) or (segmentP(v, u) and totalorderedP(u))))))) fof(co_1, c

SWC342-1.p cond_run_ord_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_1$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_2)$ cnf($\mathrm{co1}_2$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_3)$ cnf($\mathrm{co1}_3$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_4)$ cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_7$, negated_conjecture)
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_8$, negated_conjecture)
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{11}$, negated_conjecture)
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{totalorderedP}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_{13}$, negated_conjecture)

SWC343+1.p cond_run_strict_ord_front2_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ (app(w, y) $\neq x$ or $\neg$ strictorderedP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) = y and $\exists x_2$: (ssItem(z w and lt(x_2, z))))))) or (nil $\neq x$ and nil $= w$) or ($\exists x_4$: (ssList(x_4) and app(u, x_4) $= v$ and $\forall x_5$: (ssItem(x_5) $\Rightarrow$ $\forall x_6$: (ssList(x_6) $\Rightarrow$ (app(cons(x_5, nil), x_6) $\neq x_4$ or $\forall x_7$: (ssItem(x_7) $\Rightarrow$ $\forall x_8$: (ssList(x_8) $\Rightarrow$ (app(x_8, cons(x_7, nil)) $\neq$ u or $\neg$ lt(x_7, x_5))))))) and strictorderedP(u)) and (nil $\neq u$ or nil $= v$)))))) fof(co_1, conjecture)

SWC343-1.p cond_run_strict_ord_front2_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ cnf($\mathrm{co1}_1$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_2)$ cnf($\mathrm{co1}_2$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_3)$ cnf($\mathrm{co1}_3$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_4)$ cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
$\mathrm{ssList}(\mathrm{sk}_5)$ cnf($\mathrm{co1}_7$, negated_conjecture)
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ cnf($\mathrm{co1}_8$, negated_conjecture)
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ cnf($\mathrm{co1}_9$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_5 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$ $\neg$ lt(c, a) cnf($\mathrm{co1}_{10}$, negated_conjecture)

$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1)) \Rightarrow (\mathrm{ssItem}(\mathrm{sk}_6(a)) \text{ or } \mathrm{nil} = \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1) \text{ and } \mathrm{nil} = \mathrm{sk}_2) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_6(a))$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1)) \Rightarrow (\mathrm{ssList}(\mathrm{sk}_7(a)) \text{ or } \mathrm{nil} = \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1)) \Rightarrow (\mathrm{app}(\mathrm{cons}(\mathrm{sk}_6(a), \mathrm{nil}), \mathrm{sk}_7(a)) = a \text{ or } \mathrm{nil} = \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{n}$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1)) \Rightarrow (\mathrm{ssItem}(\mathrm{sk}_8(a)) \text{ or } \mathrm{nil} = \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1)) \Rightarrow (\mathrm{ssList}(\mathrm{sk}_9(a)) \text{ or } \mathrm{nil} = \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1)) \Rightarrow (\mathrm{app}(\mathrm{sk}_9(a), \mathrm{cons}(\mathrm{sk}_8(a), \mathrm{nil})) = \mathrm{sk}_1 \text{ or } \mathrm{nil} = \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{18}$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1)) \Rightarrow (\mathrm{lt}(\mathrm{sk}_8(a), \mathrm{sk}_6(a)) \text{ or } \mathrm{nil} = \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjectu}$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1) \text{ and } \mathrm{nil} = \mathrm{sk}_2) \Rightarrow \mathrm{ssList}(\mathrm{sk}_7(a))$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1) \text{ and } \mathrm{nil} = \mathrm{sk}_2) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_6(a), \mathrm{nil}), \mathrm{sk}_7(a)) = a$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{n}$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1) \text{ and } \mathrm{nil} = \mathrm{sk}_2) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_8(a))$ $\mathrm{cnf}(\mathrm{co1}_{22}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1) \text{ and } \mathrm{nil} = \mathrm{sk}_2) \Rightarrow \mathrm{ssList}(\mathrm{sk}_9(a))$ $\mathrm{cnf}(\mathrm{co1}_{23}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1) \text{ and } \mathrm{nil} = \mathrm{sk}_2) \Rightarrow \mathrm{app}(\mathrm{sk}_9(a), \mathrm{cons}(\mathrm{sk}_8(a), \mathrm{nil})) = \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}_{24}$
$(\mathrm{ssList}(a) \text{ and } \mathrm{app}(\mathrm{sk}_1, a) = \mathrm{sk}_2 \text{ and } \mathrm{strictorderedP}(\mathrm{sk}_1) \text{ and } \mathrm{nil} = \mathrm{sk}_2) \Rightarrow \mathrm{lt}(\mathrm{sk}_8(a), \mathrm{sk}_6(a))$ $\mathrm{cnf}(\mathrm{co1}_{25}, \mathrm{negated\_conjectu}$

SWC345+1.p cond_run_strict_ord_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } (\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\mathrm{cons}(y, \mathrm{nil}) \neq w \text{ or } \neg\, \mathrm{memberP}(x, y) \text{ or } \exists z$: $(\mathrm{ssItem}(z) \text{ and } y \neq z \text{ and } \mathrm{memberP}(x, z) \text{ and } y \leq z))) \text{ and } (\mathrm{nil} \neq x \text{ or } \mathrm{nil} \neq w)) \text{ or } (\mathrm{segmentP}(v, u) \text{ and } \mathrm{strictorderedP}(u)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC345-1.p cond_run_strict_ord_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5) \text{ or } \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5) \text{ or } \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3 \text{ or } \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5) \text{ or } \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{memberP}(\mathrm{sk}_4, a) \text{ and } \mathrm{sk}_5 \leq a) \Rightarrow (\mathrm{sk}_5 = a \text{ or } \mathrm{nil} = \mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3 \text{ or } \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5) \text{ or } \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a) \text{ and } \mathrm{memberP}(\mathrm{sk}_4, a) \text{ and } \mathrm{sk}_5 \leq a) \Rightarrow (\mathrm{sk}_5 = a \text{ or } \mathrm{nil} = \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{strictorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC346+1.p cond_run_strict_ord_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x) \text{ or } v \neq x \text{ or } u \neq w \text{ or } (\forall y$: $(\mathrm{ssItem}(y) \Rightarrow \forall z$: $(\mathrm{ssList}(z) \Rightarrow \forall x_1$: $(\neg\, \mathrm{ssList}(x_1) \text{ or } \mathrm{cons}(y, \mathrm{nil}) \neq w \text{ or } \mathrm{app}(\mathrm{app}(z, w), x_1) \neq x \text{ or } \exists x_2$: $(\mathrm{ssItem}(x_2) \text{ and } \mathrm{memberP}(z, x_2) \text{ an}$
$x \text{ or } \mathrm{nil} \neq w)) \text{ or } (\mathrm{segmentP}(v, u) \text{ and } \mathrm{strictorderedP}(u))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC346-1.p cond_run_strict_ord_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$

$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_6, a)$ and $\mathrm{lt}(\mathrm{sk}_5, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{lt}(a, \mathrm{sk}_5)) \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_6, a)$ and $\mathrm{lt}(\mathrm{sk}_5, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{lt}(a, \mathrm{sk}_5)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\,\mathrm{strictorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$

SWC347+1.p cond_run_strict_ord_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssList}(y) \Rightarrow$ $(\mathrm{app}(w, y) \neq x$ or $\neg\,\mathrm{strictorderedP}(w)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: $(\mathrm{ssItem}(z$
w and $\mathrm{lt}(x_2, z)))))))$ or $(\mathrm{nil} \neq x$ and $\mathrm{nil} = w)$ or $(\mathrm{segmentP}(v, u)$ and $\mathrm{strictorderedP}(u)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC347-1.p cond_run_strict_ord_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\,\mathrm{lt}(c, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\,\mathrm{strictorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC348+1.p cond_run_strict_ord_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\,\mathrm{segmentP}(x, w)$ or $(\neg\,\mathrm{singleto$

SWC348-1.p cond_run_strict_ord_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')

$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{singletonP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{strictorderedP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC349+1.p cond_segment_front_ne_x_initialize
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (\mathrm{nil} \neq w$ or $v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{frontsegP}(v, u))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC349-1.p cond_segment_front_ne_x_initialize
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{frontsegP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

SWC350+1.p cond_segment_front_ne_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\neg\, \mathrm{frontsegP}(x, w$

SWC350-1.p cond_segment_front_ne_x_run_eq_front1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{frontsegP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{equalelemsP}(a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjectur}$
$\neg\, \mathrm{frontsegP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC351+1.p cond_segment_front_ne_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\forall y$: (ssList(y) $\Rightarrow$ (app(w, y) $\neq x$ or $\neg$ strictorderedP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) = y and $\exists x_2$: (ssItem(z w and lt(x_2, z))))))) or frontsegP(v, u) or (nil $\neq x$ and nil = w)))))) fof(co_1, conjecture)

SWC351-1.p cond_segment_front_ne_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
neq(sk_2, nil) cnf(co1_7, negated_conjecture)
ssList(sk_5) cnf(co1_8, negated_conjecture)
app(sk_3, sk_5) = sk_4 cnf(co1_9, negated_conjecture)
strictorderedP(sk_3) cnf(co1_{10}, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_5 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$ $\neg$ lt(c, a) cnf(co1_{11}, negated_conjecture)
$\neg$ frontsegP(sk_2, sk_1) cnf(co1_{12}, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf(co1_{13}, negated_conjecture)

SWC352+1.p cond_segment_front_x_ne_segment_front_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or frontsegP(v, u) or (nil $\neq$ w and nil = x) or (neq(x, nil) and ($\neg$ neq(w, nil) or $\neg$ frontsegP(x, w)))))))) fof(co_1, conjecture)

SWC352-1.p cond_segment_front_x_ne_segment_front_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
$\neg$ frontsegP(sk_2, sk_1) cnf(co1_7, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf(co1_8, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_3, nil) cnf(co1_9, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ frontsegP(sk_4, sk_3) cnf(co1_{10}, negated_conjecture)

SWC353+1.p cond_segment_front_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ (app(w, y) $\neq x$ or $\neg$ totalorderedP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) = y and $\exists x_2$: (ssItem(x w and $x_2 \leq z$))))))) or frontsegP(v, u) or (nil $\neq x$ and nil = w)))))) fof(co_1, conjecture)

SWC353-1.p cond_segment_front_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')

$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssItem}(c)$ and $\mathrm{ssList}(d)$ and $\mathrm{app}(d, \mathrm{cons}(c, \mathrm{nil})) = \mathrm{sk}_3) \Rightarrow$
$\neg\, c \leq a$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{frontsegP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC354+1.p cond_segment_ne_x_head1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssList}(y)$ a
y and $\exists z$: $(\mathrm{ssItem}(z)$ and $\mathrm{cons}(z, \mathrm{nil}) = y$ and $\mathrm{hd}(x) = z$ and $\mathrm{neq}(\mathrm{nil}, x)))$ or $\mathrm{segmentP}(v, u))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})$

SWC354-1.p cond_segment_ne_x_head1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{cons}(b, \mathrm{nil}) = a$ and $\mathrm{hd}(\mathrm{sk}_4) = b$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)) \Rightarrow (\mathrm{sk}_3 = a$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil}))$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{ne}$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{cons}(b, \mathrm{nil}) = a$ and $\mathrm{hd}(\mathrm{sk}_4) = b$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})) \Rightarrow \mathrm{sk}_3 = a$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{n}$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC355+1.p cond_segment_ne_x_lead
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\forall y$: $(\mathrm{ssItem}(y)$
$\mathrm{app}(w, \mathrm{cons}(y, \mathrm{nil})) \neq x)$ or $\mathrm{segmentP}(v, u))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC355-1.p cond_segment_ne_x_lead
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$

$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_3, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC356+1.p cond_segment_ne_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or segmentP(v, u) o
(cons(y, nil) $\neq$ w or $\neg\, \mathrm{memberP}(x, y)$ or $\exists z$: (ssItem(z) and $y \neq z$ and memberP(x, z) and $z \leq y$))) and (nil $\neq$ x or nil $\neq w$))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC356-1.p cond_segment_ne_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
(ssItem(a) and memberP(sk_4, a) and $a \leq \mathrm{sk}_5$) $\Rightarrow$ ($\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_4$) $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
(ssItem(a) and memberP(sk_4, a) and $a \leq \mathrm{sk}_5$) $\Rightarrow$ ($\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_3$) $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$

SWC357+1.p cond_segment_ne_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or segmentP(v, u) o
x or nil $\neq w$) and ($\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{frontsegP}(x, w)$))))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC357-1.p cond_segment_ne_x_ne_segment_front_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{frontsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC358+1.p cond_segment_ne_x_ne_segment_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\,\mathrm{neq}(v, \mathrm{nil})$ or segmentP(v, u) o
x or $\mathrm{nil} \neq w$) and ($\neg\,\mathrm{neq}(w, \mathrm{nil})$ or $\neg\,\mathrm{segmentP}(x, w)$)))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC358-1.p cond_segment_ne_x_ne_segment_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\,\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC359+1.p cond_segment_ne_x_run_eq_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\neg\,\mathrm{segmentP}(x, w$

SWC359-1.p cond_segment_ne_x_run_eq_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
(ssList(a) and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{segmentP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)$) $\Rightarrow$ $\neg\,\mathrm{equalelemsP}(a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjectur}$
$\neg\,\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC360+1.p cond_segment_ne_x_run_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\neg\,\mathrm{segmentP}(x, w$

SWC360-1.p cond_segment_ne_x_run_ord_max1

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{totalorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{segmentP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{totalorderedP}(a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjectu}$
$\neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC361+1.p cond_segment_ne_x_run_strict_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\neg\, \mathrm{segmentP}(x, w$

SWC361-1.p cond_segment_ne_x_run_strict_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{strictorderedP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssList}(a)$ and $\mathrm{neq}(\mathrm{sk}_3, a)$ and $\mathrm{segmentP}(\mathrm{sk}_4, a)$ and $\mathrm{segmentP}(a, \mathrm{sk}_3)) \Rightarrow \neg\, \mathrm{strictorderedP}(a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conject}$
$\neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC362+1.p cond_segment_ne_x_segment_ne
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\neg\, \mathrm{segmentP}(x,$

SWC362-1.p cond_segment_ne_x_segment_ne
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\,\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC363+1.p cond_segment_ne_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\,\mathrm{neq}(v, \mathrm{nil})$ or segmentP(v, u) o
w and $\mathrm{nil} = x$) or ($\forall y$: (ssItem(y) $\Rightarrow$ (cons(y, nil) $\neq w$ or $\neg\,\mathrm{memberP}(x, y)$)) and $\mathrm{neq}(x, \mathrm{nil})$))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC363-1.p cond_segment_ne_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\neg\,\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC364+1.p cond_segment_ne_x_tail3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\forall y$: (ssItem(y)
$\mathrm{app}(\mathrm{cons}(y, \mathrm{nil}), w) \neq x$) or segmentP($v, u$)) and ($\neg\,\mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})$)))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC364-1.p cond_segment_ne_x_tail3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_3) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_3) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\,\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC365+1.p cond_segment_rear_ne_x_ne_segment_rear_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.

include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or rearsegP(v, u) or w and nil $= x$) or (neq(x, nil) and ($\neg$ neq(w, nil) or $\neg$ rearsegP(x, w)))))))) fof(co_1, conjecture)

SWC365-1.p cond_segment_rear_ne_x_ne_segment_rear_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
neq(sk_2, nil) cnf($co1_7$, negated_conjecture)
$\neg$ rearsegP(sk_2, sk_1) cnf($co1_8$, negated_conjecture)
nil $= sk_4$ $\Rightarrow$ nil $= sk_3$ cnf($co1_9$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_3, nil) cnf($co1_{10}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ rearsegP(sk_4, sk_3) cnf($co1_{11}$, negated_conjecture)

SWC366+1.p cond_segment_rear_ne_x_tail2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\exists y$: (ssList(y) a
y and $\exists z$: (ssList(z) and app(z, w) $= y$ and $\exists x_1$: (ssItem(x_1) and cons(x_1, nil) $= z$ and hd(x) $= x_1$ and neq(nil, x)))) or rears

SWC366-1.p cond_segment_rear_ne_x_tail2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf($co1_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf($co1_8$, negated_conjecture)
(ssList(a) and ssList(b) and app(b, sk_3) $= a$ and ssItem(c) and cons(c, nil) $= b$ and hd(sk_4) $= c$ and neq(nil, sk_4)) $\Rightarrow$
($sk_4 = a$ or neq(sk_2, nil)) cnf($co1_9$, negated_conjecture)
rearsegP(sk_2, sk_1) $\Rightarrow$ neq(sk_2, nil) cnf($co1_{10}$, negated_conjecture)
(ssList(a) and ssList(b) and app(b, sk_3) $= a$ and ssItem(c) and cons(c, nil) $= b$ and hd(sk_4) $= c$ and neq(nil, sk_4) and neq(sk_4
$sk_4 = a$ cnf($co1_{11}$, negated_conjecture)
rearsegP(sk_2, sk_1) $\Rightarrow$ $\neg$ neq(sk_4, nil) cnf($co1_{12}$, negated_conjecture)

SWC367+1.p cond_segment_rear_x_ne_segment_rear_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or rearsegP(v, u) or ((nil $\neq$
x or nil $\neq w$) and ($\neg$ neq(w, nil) or $\neg$ rearsegP(x, w)))))))) fof(co_1, conjecture)

SWC367-1.p cond_segment_rear_x_ne_segment_rear_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')

$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{rearsegP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{rearsegP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC368+1.p cond_segment_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\mathrm{segmentP}(v, u)$ or $(\forall y$: $(\mathrm{ssItem}($
$(\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, y)$ or $\exists z$: $(\mathrm{ssItem}(z)$ and $y \neq z$ and $\mathrm{memberP}(x, z)$ and $z \leq y)))$ and $(\mathrm{nil} \neq$
x or $\mathrm{nil} \neq w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC368-1.p cond_segment_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_5) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_5) \Rightarrow (\mathrm{sk}_5 = a$ or $\mathrm{nil} = \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC369+1.p cond_segment_x_ne_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\mathrm{segmentP}(v, u)$ or $(\mathrm{nil} \neq$
w and $\mathrm{nil} = x)$ or $(\mathrm{neq}(x, \mathrm{nil})$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{segmentP}(x, w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC369-1.p cond_segment_x_ne_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$

$\neg$ segmentP($\mathrm{sk}_2, \mathrm{sk}_1$) cnf($\mathrm{co1}_7$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_8$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_3, nil) cnf($\mathrm{co1}_9$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ segmentP($\mathrm{sk}_4, \mathrm{sk}_3$) cnf($\mathrm{co1}_{10}$, negated_conjecture)

SWC370+1.p cond_segment_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ (app(w, y) $\neq x$ or $\neg$ equalelemsP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) = y and $\exists x_2$: (ssList(x_2) w))))) or segmentP(v, u) or (nil $\neq x$ and nil = w)))))) fof(co_1, conjecture)

SWC370-1.p cond_segment_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
ssList(sk_5) cnf($\mathrm{co1}_7$, negated_conjecture)
app($\mathrm{sk}_3, \mathrm{sk}_5$) = sk_4 cnf($\mathrm{co1}_8$, negated_conjecture)
equalelemsP(sk_3) cnf($\mathrm{co1}_9$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_5 and ssList(c)) $\Rightarrow$ app(c, cons(a, nil)) $\neq \mathrm{sk}_3$ cnf($\mathrm{co1}_{10}$, negated_con
$\neg$ segmentP($\mathrm{sk}_2, \mathrm{sk}_1$) cnf($\mathrm{co1}_{11}$, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{12}$, negated_conjecture)

SWC371+1.p cond_segment_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ (app(w, y) $\neq x$ or $\neg$ totalorderedP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) = y and $\exists x_2$: (ssItem(x w and $x_2 \leq z$)))))) or segmentP(v, u) or (nil $\neq x$ and nil = w)))))) fof(co_1, conjecture)

SWC371-1.p cond_segment_x_run_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
ssList(sk_5) cnf($\mathrm{co1}_7$, negated_conjecture)
app($\mathrm{sk}_3, \mathrm{sk}_5$) = sk_4 cnf($\mathrm{co1}_8$, negated_conjecture)
totalorderedP(sk_3) cnf($\mathrm{co1}_9$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_5 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$
$\neg$ $c \leq a$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
$\neg$ segmentP($\mathrm{sk}_2, \mathrm{sk}_1$) cnf($\mathrm{co1}_{11}$, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($\mathrm{co1}_{12}$, negated_conjecture)

SWC372+1.p cond_segment_x_run_strict_ord_front2

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ (app(w, y) $\neq x$ or $\neg$ strictorderedP(w) or $\exists z$: (ssItem(z) and $\exists x_1$: (ssList(x_1) and app(cons(z, nil), x_1) = y and $\exists x_2$: (ssItem(z w and lt(x_2, z))))))) or segmentP(v, u) or (nil $\neq x$ and nil = w)))))) fof(co_1, conjecture)

SWC372-1.p cond_segment_x_run_strict_ord_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssList(sk_5) cnf(co1_7, negated_conjecture)
app(sk_3, sk_5) = sk_4 cnf(co1_8, negated_conjecture)
strictorderedP(sk_3) cnf(co1_9, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_5 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$ $\neg$ lt(c, a) cnf(co1_{10}, negated_conjecture)
$\neg$ segmentP(sk_2, sk_1) cnf(co1_{11}, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf(co1_{12}, negated_conjecture)

SWC373+1.p cond_segment_x_segment_rear
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ rearsegP(x, w) or segmentP(v

SWC373-1.p cond_segment_x_segment_rear
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
rearsegP(sk_4, sk_3) cnf(co1_7, negated_conjecture)
$\neg$ segmentP(sk_2, sk_1) cnf(co1_8, negated_conjecture)

SWC374+1.p cond_segment_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or segmentP(v, u) or ($\forall y$: (ssItem(y (cons(y, nil) $\neq w$ or $\neg$ memberP(x, y))) and (nil $\neq x$ or nil $\neq w$))))))) fof(co_1, conjecture)

SWC374-1.p cond_segment_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)

$\text{ssList}(\text{sk}_2)$ $\text{cnf}(\text{co1}_2, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_3)$ $\text{cnf}(\text{co1}_3, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_4)$ $\text{cnf}(\text{co1}_4, \text{negated\_conjecture})$
$\text{sk}_2 = \text{sk}_4$ $\text{cnf}(\text{co1}_5, \text{negated\_conjecture})$
$\text{sk}_1 = \text{sk}_3$ $\text{cnf}(\text{co1}_6, \text{negated\_conjecture})$
$\neg\, \text{segmentP}(\text{sk}_2, \text{sk}_1)$ $\text{cnf}(\text{co1}_7, \text{negated\_conjecture})$
$\text{ssItem}(\text{sk}_5) \text{ or } \text{nil} = \text{sk}_4$ $\text{cnf}(\text{co1}_8, \text{negated\_conjecture})$
$\text{ssItem}(\text{sk}_5) \text{ or } \text{nil} = \text{sk}_3$ $\text{cnf}(\text{co1}_9, \text{negated\_conjecture})$
$\text{cons}(\text{sk}_5, \text{nil}) = \text{sk}_3 \text{ or } \text{nil} = \text{sk}_4$ $\text{cnf}(\text{co1}_{10}, \text{negated\_conjecture})$
$\text{memberP}(\text{sk}_4, \text{sk}_5) \text{ or } \text{nil} = \text{sk}_4$ $\text{cnf}(\text{co1}_{11}, \text{negated\_conjecture})$
$\text{cons}(\text{sk}_5, \text{nil}) = \text{sk}_3 \text{ or } \text{nil} = \text{sk}_3$ $\text{cnf}(\text{co1}_{12}, \text{negated\_conjecture})$
$\text{memberP}(\text{sk}_4, \text{sk}_5) \text{ or } \text{nil} = \text{sk}_3$ $\text{cnf}(\text{co1}_{13}, \text{negated\_conjecture})$

SWC375+1.p cond_set_eq_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\text{ssList}(u) \Rightarrow \forall v$: $(\text{ssList}(v) \Rightarrow \forall w$: $(\text{ssList}(w) \Rightarrow \forall x$: $(\text{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } x \neq w \text{ or } \forall y$: $(\text{ssItem}(y) \Rightarrow ((\neg\, \text{memberP}(v, y) \text{ and } \neg\, \text{memberP}(u, y)) \text{ or } (\text{memberP}(v, y) \text{ and } \text{memberP}(u, y))))))))))$ $\text{fof}(\text{co}_1, \text{c}$

SWC375-1.p cond_set_eq_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\text{ssList}(\text{sk}_1)$ $\text{cnf}(\text{co1}_1, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_2)$ $\text{cnf}(\text{co1}_2, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_3)$ $\text{cnf}(\text{co1}_3, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_4)$ $\text{cnf}(\text{co1}_4, \text{negated\_conjecture})$
$\text{sk}_2 = \text{sk}_4$ $\text{cnf}(\text{co1}_5, \text{negated\_conjecture})$
$\text{sk}_1 = \text{sk}_3$ $\text{cnf}(\text{co1}_6, \text{negated\_conjecture})$
$\text{sk}_4 = \text{sk}_3$ $\text{cnf}(\text{co1}_7, \text{negated\_conjecture})$
$\text{ssItem}(\text{sk}_5)$ $\text{cnf}(\text{co1}_8, \text{negated\_conjecture})$
$\text{memberP}(\text{sk}_2, \text{sk}_5) \text{ or } \text{memberP}(\text{sk}_1, \text{sk}_5)$ $\text{cnf}(\text{co1}_9, \text{negated\_conjecture})$
$\text{memberP}(\text{sk}_2, \text{sk}_5) \Rightarrow \neg\, \text{memberP}(\text{sk}_1, \text{sk}_5)$ $\text{cnf}(\text{co1}_{10}, \text{negated\_conjecture})$

SWC376+1.p cond_set_eq_x_rot_r_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\text{ssList}(u) \Rightarrow \forall v$: $(\text{ssList}(v) \Rightarrow \forall w$: $(\text{ssList}(w) \Rightarrow \forall x$: $(\text{ssList}(x) \Rightarrow (v \neq x \text{ or } u \neq w \text{ or } \forall y$: $(\text{ssItem}(y) \Rightarrow ((\neg\, \text{memberP}(v, y) \text{ and } \neg\, \text{memberP}(u, y)) \text{ or } (\text{memberP}(v, y) \text{ and } \text{memberP}(u, y)))) \text{ or } (\text{nil} \neq w \text{ and } \text{nil} = x) \text{ or } (\text{neq}(x, \text{nil}) \text{ a}$
z and $\exists x_1$: $(\text{ssList}(x_1)$ and $\exists x_2$: $(\text{ssList}(x_2)$ and $\text{tl}(w) = x_1$ and $\text{app}(x_1, x_2) = z$ and $\exists x_3$: $(\text{ssItem}(x_3)$ and $\text{cons}(x_3, \text{nil}) = x_2$ and $\text{hd}(w) = x_3$ and $\text{neq}(\text{nil}, w))$ and $\text{neq}(\text{nil}, w)))))))))))$ $\text{fof}(\text{co}_1, \text{conjecture})$

SWC376-1.p cond_set_eq_x_rot_r_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\text{ssList}(\text{sk}_1)$ $\text{cnf}(\text{co1}_1, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_2)$ $\text{cnf}(\text{co1}_2, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_3)$ $\text{cnf}(\text{co1}_3, \text{negated\_conjecture})$
$\text{ssList}(\text{sk}_4)$ $\text{cnf}(\text{co1}_4, \text{negated\_conjecture})$
$\text{sk}_2 = \text{sk}_4$ $\text{cnf}(\text{co1}_5, \text{negated\_conjecture})$
$\text{sk}_1 = \text{sk}_3$ $\text{cnf}(\text{co1}_6, \text{negated\_conjecture})$
$\text{ssItem}(\text{sk}_5)$ $\text{cnf}(\text{co1}_7, \text{negated\_conjecture})$
$\text{memberP}(\text{sk}_2, \text{sk}_5) \text{ or } \text{memberP}(\text{sk}_1, \text{sk}_5)$ $\text{cnf}(\text{co1}_8, \text{negated\_conjecture})$
$\text{memberP}(\text{sk}_2, \text{sk}_5) \Rightarrow \neg\, \text{memberP}(\text{sk}_1, \text{sk}_5)$ $\text{cnf}(\text{co1}_9, \text{negated\_conjecture})$

$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ cnf($\mathrm{co1}_{11}$, negated_conjecture)
(neq(sk_4, nil) and ssList(a) and ssList(b) and ssList(c) and tl(sk_3) = b and app(b, c) = a and ssItem(d) and cons(d, nil) = c and hd(sk_3) = d and neq(nil, sk_3) and neq(nil, sk_3)) $\Rightarrow$ $\mathrm{sk}_4 = a$ cnf($\mathrm{co1}_{12}$, negated_conjecture)

SWC377+1.p cond_set_eq_x_rot_r_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssItem(y) $\Rightarrow$ (($\neg$ memberP(v, y) and $\neg$ memberP(u, y)) or (memberP(v, y) and memberP(u, y)))) or (nil $\neq w$ and nil $= x$) or ($\forall z$: (ssItem($\forall x_1$: (ssList(x_1) $\Rightarrow$ (app(cons(z, nil), x_1) $\neq w$ or app(x_1, cons(z, nil)) $\neq x$))) and neq(x, nil))))))) fof(co_1, conjecture)

SWC377-1.p cond_set_eq_x_rot_r_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
ssItem(sk_5) cnf($\mathrm{co1}_7$, negated_conjecture)
memberP($\mathrm{sk}_2, \mathrm{sk}_5$) or memberP($\mathrm{sk}_1, \mathrm{sk}_5$) cnf($\mathrm{co1}_8$, negated_conjecture)
memberP($\mathrm{sk}_2, \mathrm{sk}_5$) $\Rightarrow$ $\neg$ memberP($\mathrm{sk}_1, \mathrm{sk}_5$) cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow$ ssItem(sk_6) cnf($\mathrm{co1}_{11}$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow$ ssList(sk_7) cnf($\mathrm{co1}_{12}$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_6, \mathrm{nil}), \mathrm{sk}_7) = \mathrm{sk}_3$ cnf($\mathrm{co1}_{13}$, negated_conjecture)
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})) = \mathrm{sk}_4$ cnf($\mathrm{co1}_{14}$, negated_conjecture)

SWC378+1.p cond_set_eq_x_rotate
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$ $\forall z$: ($\neg$ ssList(z) or app(y, z) $\neq x$ or app(z, y) $\neq w$)) or $\forall x_1$: ($\neg$ ssItem(x_1) or ($\neg$ memberP(v, x_1) and $\neg$ memberP(u, x_1)) or (r

SWC378-1.p cond_set_eq_x_rotate
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
ssList(sk_5) cnf($\mathrm{co1}_7$, negated_conjecture)
ssList(sk_6) cnf($\mathrm{co1}_8$, negated_conjecture)
$\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_6) = \mathrm{sk}_4$ cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_5) = \mathrm{sk}_3$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
ssItem(sk_7) cnf($\mathrm{co1}_{11}$, negated_conjecture)
memberP($\mathrm{sk}_2, \mathrm{sk}_7$) or memberP($\mathrm{sk}_1, \mathrm{sk}_7$) cnf($\mathrm{co1}_{12}$, negated_conjecture)
memberP($\mathrm{sk}_2, \mathrm{sk}_7$) $\Rightarrow$ $\neg$ memberP($\mathrm{sk}_1, \mathrm{sk}_7$) cnf($\mathrm{co1}_{13}$, negated_conjecture)

SWC379+1.p cond_set_min_elems_x_set_min_elems

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and (($\neg$ memberP
($\neg$ memberP(x, z) or $\neg\, z \leq y$ or $y = z$)) and memberP(x, y)) or (memberP(w, y) and ($\neg$ memberP(x, y) or $\exists z$: (ssItem(z) and
z and memberP(x, z) and $z \leq y$))))) or $\forall x_1$: (ssItem(x_1) $\Rightarrow$ (($\neg$ memberP(u, x_1) and ($\neg$ memberP(v, x_1) or $\exists x_2$: (ssItem(x_2)
x_2 and memberP(v, x_2) and $x_2 \leq x_1$))) or ($\forall x_2$: (ssItem(x_2) $\Rightarrow$ ($\neg$ memberP(v, x_2) or $\neg\, x_2 \leq x_1$ or $x_1 = x_2$)) and memberP

SWC379-1.p cond_set_min_elems_x_set_min_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or ssItem($\mathrm{sk}_5(a)$)) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or memberP($\mathrm{sk}_4, \mathrm{sk}_5(a)$)) cnf($\mathrm{co1}_8$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ (memberP(sk_3, a) or $\mathrm{sk}_5(a) \leq a$) cnf($\mathrm{co1}_9$, negated_conjecture)
(ssItem(a) and $a = \mathrm{sk}_5(a)$ and memberP(sk_4, a)) $\Rightarrow$ memberP(sk_3, a) cnf($\mathrm{co1}_{10}$, negated_conjecture)
(ssItem(a) and memberP(sk_3, a)) $\Rightarrow$ memberP(sk_4, a) cnf($\mathrm{co1}_{11}$, negated_conjecture)
(ssItem(a) and memberP(sk_3, a) and ssItem(b) and memberP(sk_4, b) and $b \leq a$) $\Rightarrow$ $a = b$ cnf($\mathrm{co1}_{12}$, negated_conjecture)
ssItem(sk_6) cnf($\mathrm{co1}_{13}$, negated_conjecture)
memberP($\mathrm{sk}_1, \mathrm{sk}_6$) or memberP($\mathrm{sk}_2, \mathrm{sk}_6$) cnf($\mathrm{co1}_{14}$, negated_conjecture)
(ssItem(a) and memberP(sk_2, a) and $a \leq \mathrm{sk}_6$) $\Rightarrow$ (memberP($\mathrm{sk}_1, \mathrm{sk}_6$) or $\mathrm{sk}_6 = a$) cnf($\mathrm{co1}_{15}$, negated_conjecture)
(memberP($\mathrm{sk}_2, \mathrm{sk}_6$) and memberP($\mathrm{sk}_1, \mathrm{sk}_6$)) $\Rightarrow$ ssItem(sk_7) cnf($\mathrm{co1}_{16}$, negated_conjecture)
(memberP($\mathrm{sk}_2, \mathrm{sk}_6$) and memberP($\mathrm{sk}_1, \mathrm{sk}_6$)) $\Rightarrow$ memberP($\mathrm{sk}_2, \mathrm{sk}_7$) cnf($\mathrm{co1}_{17}$, negated_conjecture)
(memberP($\mathrm{sk}_2, \mathrm{sk}_6$) and memberP($\mathrm{sk}_1, \mathrm{sk}_6$)) $\Rightarrow$ $\mathrm{sk}_7 \leq \mathrm{sk}_6$ cnf($\mathrm{co1}_{18}$, negated_conjecture)
($\mathrm{sk}_6 = \mathrm{sk}_7$ and memberP($\mathrm{sk}_2, \mathrm{sk}_6$)) $\Rightarrow$ $\neg$ memberP($\mathrm{sk}_1, \mathrm{sk}_6$) cnf($\mathrm{co1}_{19}$, negated_conjecture)

SWC380+1.p cond_some1_x_head3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\exists y$: (ssItem(y)
u and memberP(v, y)) or $\forall z$: (ssItem(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ (cons(z, nil) $\neq$ w or app(cons(z, nil), x_1) $\neq$
x)))) and ($\neg$ neq(v, nil) or neq(x, nil))))))) fof(co_1, conjecture)

SWC380-1.p cond_some1_x_head3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_8$, negated_conjecture)
(ssItem(a) and cons(a, nil) = sk_1 and memberP(sk_2, a)) $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_9$, negated_conjecture)
ssItem(sk_5) or neq(sk_2, nil) cnf($\mathrm{co1}_{10}$, negated_conjecture)
ssList(sk_6) or neq(sk_2, nil) cnf($\mathrm{co1}_{11}$, negated_conjecture)
cons(sk_5, nil) = sk_3 or neq(sk_2, nil) cnf($\mathrm{co1}_{12}$, negated_conjecture)
app(cons(sk_5, nil), sk_6) = sk_4 or neq(sk_2, nil) cnf($\mathrm{co1}_{13}$, negated_conjecture)

(ssItem(a) and cons(a, nil) = sk_1 and memberP(sk_2, a)) $\Rightarrow$ $\neg$ neq(sk_4, nil) cnf($\mathrm{co1}_{14}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) cnf($\mathrm{co1}_{15}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_6) cnf($\mathrm{co1}_{16}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ cons(sk_5, nil) = sk_3 cnf($\mathrm{co1}_{17}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(cons(sk_5, nil), sk_6) = sk_4 cnf($\mathrm{co1}_{18}$, negated_conjecture)

SWC381+1.p cond_some1_x_some1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ((¬ neq(v, nil) or $\exists y$: (ssItem(y)
u and memberP(v, y)) or $\forall z$: (ssItem(z) $\Rightarrow$ (cons(z, nil) $\neq w$ or ¬ memberP(x, z)))) and (¬ neq(v, nil) or neq(x, nil))))))))

SWC381-1.p cond_some1_x_some1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_8$, negated_conjecture)
(ssItem(a) and cons(a, nil) = sk_1 and memberP(sk_2, a)) $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_9$, negated_conjecture)
ssItem(sk_5) or neq(sk_2, nil) cnf($\mathrm{co1}_{10}$, negated_conjecture)
cons(sk_5, nil) = sk_3 or neq(sk_2, nil) cnf($\mathrm{co1}_{11}$, negated_conjecture)
memberP(sk_4, sk_5) or neq(sk_2, nil) cnf($\mathrm{co1}_{12}$, negated_conjecture)
(ssItem(a) and cons(a, nil) = sk_1 and memberP(sk_2, a)) $\Rightarrow$ ¬ neq(sk_4, nil) cnf($\mathrm{co1}_{13}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) cnf($\mathrm{co1}_{14}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ cons(sk_5, nil) = sk_3 cnf($\mathrm{co1}_{15}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ memberP(sk_4, sk_5) cnf($\mathrm{co1}_{16}$, negated_conjecture)

SWC382+1.p cond_some2_x_head1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ((¬ neq(v, nil) or $\exists y$: (ssList(y) a
y and $\exists z$: (ssItem(z) and cons(z, nil) = y and hd(x) = z and neq(nil, x))) or (singletonP(u) and segmentP(v, u))) and (¬ neq

SWC382-1.p cond_some2_x_head1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_8$, negated_conjecture)
(ssList(a) and ssItem(b) and cons(b, nil) = a and hd(sk_4) = b and neq(nil, sk_4)) $\Rightarrow$ ($\mathrm{sk}_3 = a$ or neq(sk_2, nil)) cnf($\mathrm{co1}_9$, ne
(singletonP(sk_1) and segmentP(sk_2, sk_1)) $\Rightarrow$ neq(sk_2, nil) cnf($\mathrm{co1}_{10}$, negated_conjecture)
(ssList(a) and ssItem(b) and cons(b, nil) = a and hd(sk_4) = b and neq(nil, sk_4) and neq(sk_4, nil)) $\Rightarrow$ $\mathrm{sk}_3 = a$ cnf($\mathrm{co1}_{11}$, n
(singletonP(sk_1) and segmentP(sk_2, sk_1)) $\Rightarrow$ ¬ neq(sk_4, nil) cnf($\mathrm{co1}_{12}$, negated_conjecture)

SWC383+1.p cond_some2_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or ($\forall y$: (ssItem(y) (cons(y, nil) $\neq$ w or $\neg$ memberP(x, y) or $\exists z$: (ssItem(z) and $y \neq z$ and memberP(x, z) and $y \leq z$))) and (nil $\neq$ x or nil $\neq w$)) or (singletonP(u) and segmentP(v, u))))))) fof(co_1, conjecture)

SWC383-1.p cond_some2_x_maximal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
neq(sk_2, nil) cnf(co1_7, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_4$ cnf(co1_8, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_3$ cnf(co1_9, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_4$ cnf(co1_{10}, negated_conjecture)
memberP(sk_4, sk_5) or nil $= \text{sk}_4$ cnf(co1_{11}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\text{sk}_5 \leq a$) $\Rightarrow$ ($\text{sk}_5 = a$ or nil $= \text{sk}_4$) cnf(co1_{12}, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_3$ cnf(co1_{13}, negated_conjecture)
memberP(sk_4, sk_5) or nil $= \text{sk}_3$ cnf(co1_{14}, negated_conjecture)
(ssItem(a) and memberP(sk_4, a) and $\text{sk}_5 \leq a$) $\Rightarrow$ ($\text{sk}_5 = a$ or nil $= \text{sk}_3$) cnf(co1_{15}, negated_conjecture)
singletonP(sk_1) $\Rightarrow$ $\neg$ segmentP(sk_2, sk_1) cnf(co1_{16}, negated_conjecture)

SWC384+1.p cond_some2_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or ($\forall y$: (ssItem(y) $\forall z$: (ssList(z) $\Rightarrow$ $\forall x_1$: (ssList(x_1) $\Rightarrow$ (cons(y, nil) $\neq w$ or app(app(z, w), x_1) $\neq x$ or $\exists x_2$: (ssItem(x_2) and memberP(z, x_2) an x or nil $\neq w$)) or (singletonP(u) and segmentP(v, u))))))) fof(co_1, conjecture)

SWC384-1.p cond_some2_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
neq(sk_2, nil) cnf(co1_7, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_4$ cnf(co1_8, negated_conjecture)
ssItem(sk_5) or nil $= \text{sk}_3$ cnf(co1_9, negated_conjecture)
ssList(sk_6) or nil $= \text{sk}_4$ cnf(co1_{10}, negated_conjecture)
ssList(sk_7) or nil $= \text{sk}_4$ cnf(co1_{11}, negated_conjecture)
cons(sk_5, nil) $= \text{sk}_3$ or nil $= \text{sk}_4$ cnf(co1_{12}, negated_conjecture)
app(app(sk_6, sk_3), sk_7) $= \text{sk}_4$ or nil $= \text{sk}_4$ cnf(co1_{13}, negated_conjecture)
(ssItem(a) and memberP(sk_6, a) and lt(sk_5, a)) $\Rightarrow$ nil $= \text{sk}_4$ cnf(co1_{14}, negated_conjecture)
(ssItem(a) and memberP(sk_7, a) and lt(a, sk_5)) $\Rightarrow$ nil $= \text{sk}_4$ cnf(co1_{15}, negated_conjecture)
ssList(sk_6) or nil $= \text{sk}_3$ cnf(co1_{16}, negated_conjecture)

$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_6, a)$ and $\mathrm{lt}(\mathrm{sk}_5, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{lt}(a, \mathrm{sk}_5)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$
$\mathrm{singletonP}(\mathrm{sk}_1) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{22}, \mathrm{negated\_conjecture})$

SWC385+1.p cond_some2_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\neg\, \mathrm{segmentP}(x, w$

SWC385-1.p cond_some2_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{singletonP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{singletonP}(\mathrm{sk}_1) \Rightarrow \neg\, \mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC386+1.p cond_some_total1_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $(\forall y$: $(\mathrm{ssItem}(y) \Rightarrow$ $(\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, y)))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w))$ or $((\mathrm{nil} \neq v$ or $\mathrm{nil} = u)$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists z$: $(\mathrm{ssItem}(z)$ u and $\mathrm{memberP}(v, z)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC386-1.p cond_some_total1_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_2$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{cons}(a, \mathrm{nil}) = \mathrm{sk}_1$ and $\mathrm{memberP}(\mathrm{sk}_2, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_2$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_1 \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$(\mathrm{nil} = \mathrm{sk}_1$ and $\mathrm{ssItem}(a)$ and $\mathrm{cons}(a, \mathrm{nil}) = \mathrm{sk}_1) \Rightarrow \neg\, \mathrm{memberP}(\mathrm{sk}_2, a)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$

SWC387+1.p cond_some_total2_x_some_total1

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and cons(y, nil) = u and memberP(v, y)) or (nil $\neq w$ and nil $= x$) or (nil $= v$ and nil $= u$) or ($\forall z$: (ssItem(z) $\Rightarrow$ (cons(z, nil) $\neq w$ or $\neg$ memberP(x, z))) and neq(x, nil))))))) fof(co_1, conjecture)

SWC387-1.p cond_some_total2_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
(ssItem(a) and cons(a, nil) = sk_1) $\Rightarrow$ $\neg$ memberP(sk_2, a) cnf($co1_7$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($co1_8$, negated_conjecture)
nil = sk_2 $\Rightarrow$ nil $\neq$ sk_1 cnf($co1_9$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) cnf($co1_{10}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ cons(sk_5, nil) = sk_3 cnf($co1_{11}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ memberP(sk_4, sk_5) cnf($co1_{12}$, negated_conjecture)

SWC388+1.p cond_some_total2_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\exists y$: (ssItem(u) and memberP(v, y)) or ($\neg$ singletonP(w) and neq(x, nil)) or (nil $= v$ and nil $= u$)))))) fof(co_1, conjecture)

SWC388-1.p cond_some_total2_x_some_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
segmentP(sk_4, sk_3) cnf($co1_7$, negated_conjecture)
(ssItem(a) and cons(a, nil) = sk_1) $\Rightarrow$ $\neg$ memberP(sk_2, a) cnf($co1_8$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ singletonP(sk_3) cnf($co1_9$, negated_conjecture)
nil = sk_2 $\Rightarrow$ nil $\neq$ sk_1 cnf($co1_{10}$, negated_conjecture)

SWC389+1.p cond_some_total3_x_pivot
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or ($\forall y$: (ssItem(y) $\Rightarrow$ $\forall z$: (ssList(z) $\Rightarrow$ $\forall x_1$: ($\neg$ ssList(x_1) or cons(y, nil) $\neq w$ or app(app(z, w), x_1) $\neq x$ or $\exists x_2$: (ssItem(x_2) and memberP(z, x_2) and x or nil $\neq w$)) or (segmentP(v, u) and ($\neg$ neq(v, nil) or singletonP(u))))))) fof(co_1, conjecture)

SWC389-1.p cond_some_total3_x_pivot

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_6, a)$ and $\mathrm{lt}(\mathrm{sk}_5, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{lt}(a, \mathrm{sk}_5)) \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_7)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_6, \mathrm{sk}_3), \mathrm{sk}_7) = \mathrm{sk}_4$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_6, a)$ and $\mathrm{lt}(\mathrm{sk}_5, a)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{19}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_7, a)$ and $\mathrm{lt}(a, \mathrm{sk}_5)) \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{20}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{21}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\,\mathrm{singletonP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{22}, \mathrm{negated\_conjecture})$

SWC390+1.p cond_some_total3_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $(\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\mathrm{cons}(y, \mathrm{nil}) \neq w$ or $\neg\,\mathrm{memberP}(x, y)))$ and $\mathrm{neq}(x, \mathrm{nil}))$ or $(\mathrm{segmentP}(v, u)$ and $(\neg\,\mathrm{neq}(v, \mathrm{nil})$ or sing

SWC390-1.p cond_some_total3_x_some_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{segmentP}(\mathrm{sk}_2, \mathrm{sk}_1) \Rightarrow \neg\,\mathrm{singletonP}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC391+1.p cond_subst_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $x \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\neg\,\mathrm{memberP}(u, y)$ or $\mathrm{memberP}(v, y))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC391-1.p cond_subst_x_copy
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_4 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC392+1.p cond_subst_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\neg\, \mathrm{memberP}(u, y)$ or $\mathrm{memberP}(v, y)))$ or $(\forall z$: $(\mathrm{ssItem}(z) \Rightarrow (\mathrm{cons}(z, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, z)$ or $\exists x_1$: $(\mathrm{ssItem}(x_1)$ and z x_1 and $\mathrm{memberP}(x, x_1)$ and $x_1 \leq z)))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC392-1.p cond_subst_x_minimal
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_6, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_6) \Rightarrow (\mathrm{sk}_6 = a$ or $\mathrm{nil} = \mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_6, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)$ and $a \leq \mathrm{sk}_6) \Rightarrow (\mathrm{sk}_6 = a$ or $\mathrm{nil} = \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$

SWC393+1.p cond_subst_x_ne_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\neg\, \mathrm{memberP}(u, y)$ or $\mathrm{memberP}(v, y)))$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $(\mathrm{neq}(x, \mathrm{nil})$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{segmentP}(x, w))))))))$

SWC393-1.p cond_subst_x_ne_segment_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')

$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC394+1.p cond_subst_x_ne_segment_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\neg\, \mathrm{memberP}(u, y)$ or $\mathrm{memberP}(v, y)))$ or $((\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w)$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\neg\, \mathrm{segmentP}(x, w)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conje}$

SWC394-1.p cond_subst_x_ne_segment_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4$ or $\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3$ or $\mathrm{segmentP}(\mathrm{sk}_4, \mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

SWC395+1.p cond_subst_x_rot_l_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\neg\, \mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\forall y$: $(\neg\, \mathrm{ssItem}(y)$ or $\neg\, \mathrm{memberP}($
w and $\mathrm{nil} = x)$ or $(\exists z$: $(\mathrm{ssList}(z)$ and $w \neq z$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$ and $\mathrm{tl}(x) = x_1$ and $\mathrm{app}(x_1, x_2) =$
z and $\exists x_3$: $(\mathrm{ssItem}(x_3)$ and $\mathrm{cons}(x_3, \mathrm{nil}) = x_2$ and $\mathrm{hd}(x) = x_3$ and $\mathrm{neq}(\mathrm{nil}, x))$ and $\mathrm{neq}(\mathrm{nil}, x))))$ and $\mathrm{neq}(x, \mathrm{nil})))))$ $\mathrm{fof}(c$

SWC395-1.p cond_subst_x_rot_l_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$

$\mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
($\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{tl}(\mathrm{sk}_4) = b$ and $\mathrm{app}(b, c) = a$ and $\mathrm{ssItem}(d)$ and $\mathrm{cons}(d, \mathrm{nil}) = c$ and $\mathrm{hd}(\mathrm{sk}_4) = d$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_4)$ and $\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$) $\Rightarrow$ $\mathrm{sk}_3 = a$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC396+1.p cond_subst_x_rot_r_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: ($\mathrm{ssItem}(y) \Rightarrow$ ($\neg\, \mathrm{memberP}(u, y)$ or $\mathrm{memberP}(v, y)$)) or ($\mathrm{nil} \neq w$ and $\mathrm{nil} = x$) or ($\mathrm{neq}(x, \mathrm{nil})$ and ($\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\exists z$: ($\mathrm{ssList}(z)$ and $x \neq z$ and $\exists x_1$: ($\mathrm{ssList}(x_1)$ and $\exists x_2$: ($\mathrm{ssList}(x_2)$ and $\mathrm{tl}(w) = x_1$ and $\mathrm{app}(x_1, x_2) = z$ and $\exists x_3$: ($\mathrm{ssItem}(x_3)$ and $\mathrm{cons}(x_3, \mathrm{nil}) = x_2$ and $\mathrm{hd}(w) = x_3$ and $\mathrm{neq}(\mathrm{nil}, w)$) and $\mathrm{neq}(\mathrm{nil}, w)$)))))))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC396-1.p cond_subst_x_rot_r_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_3, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
($\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ and $\mathrm{ssList}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{tl}(\mathrm{sk}_3) = b$ and $\mathrm{app}(b, c) = a$ and $\mathrm{ssItem}(d)$ and $\mathrm{cons}(d, \mathrm{nil}) = c$ and $\mathrm{hd}(\mathrm{sk}_3) = d$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_3)$ and $\mathrm{neq}(\mathrm{nil}, \mathrm{sk}_3)$) $\Rightarrow$ $\mathrm{sk}_4 = a$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

SWC397+1.p cond_subst_x_rot_r_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: ($\mathrm{ssItem}(y) \Rightarrow$ ($\neg\, \mathrm{memberP}(u, y)$ or $\mathrm{memberP}(v, y)$)) or ($\mathrm{nil} \neq w$ and $\mathrm{nil} = x$) or ($\forall z$: ($\mathrm{ssItem}(z) \Rightarrow \forall x_1$: ($\mathrm{ssList}(x_1) \Rightarrow$ ($\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x$ w or $\mathrm{app}(x_1, \mathrm{cons}(z, \mathrm{nil})) \neq x$))) and $\mathrm{neq}(x, \mathrm{nil})$))))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC397-1.p cond_subst_x_rot_r_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$

$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_6, \mathrm{nil}), \mathrm{sk}_7) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_7, \mathrm{cons}(\mathrm{sk}_6, \mathrm{nil})) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC398+1.p cond_subst_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\mathrm{ssList}(x) \Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: ($\mathrm{ssList}(y) \Rightarrow$ ($\mathrm{app}(w, y) \neq x$ or $\neg\,\mathrm{equalelemsP}(w)$ or $\exists z$: ($\mathrm{ssItem}(z)$ and $\exists x_1$: ($\mathrm{ssList}(x_1)$ and $\mathrm{app}(\mathrm{cons}(z, \mathrm{nil}), x_1) = y$ and $\exists x_2$: ($\mathrm{ssList}(x_2)$ w))))) or $\forall x_3$: ($\mathrm{ssItem}(x_3) \Rightarrow$ ($\neg\,\mathrm{memberP}(u, x_3)$ or $\mathrm{memberP}(v, x_3)$)) or ($\mathrm{nil} \neq x$ and $\mathrm{nil} = w$)))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC398-1.p cond_subst_x_run_eq_front2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_3, \mathrm{sk}_5) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
($\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_5$ and $\mathrm{ssList}(c)$) $\Rightarrow$ $\mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_con}$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\neg\,\mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_3 \Rightarrow \mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC399+1.p cond_subst_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: ($\mathrm{ssList}(u) \Rightarrow \forall v$: ($\mathrm{ssList}(v) \Rightarrow \forall w$: ($\mathrm{ssList}(w) \Rightarrow \forall x$: ($\neg\,\mathrm{ssList}(x)$ or $v \neq x$ or $u \neq w$ or $\forall y$: ($\mathrm{ssList}(y) \Rightarrow$ $\forall z$: ($\neg\,\mathrm{ssList}(z)$ or $\mathrm{app}(\mathrm{app}(y, w), z) \neq x$ or $\neg\,\mathrm{equalelemsP}(w)$ or $\exists x_1$: ($\mathrm{ssItem}(x_1)$ and $\exists x_2$: ($\mathrm{ssList}(x_2)$ and $\mathrm{app}(x_2, \mathrm{cons}(x_1,$ y and $\exists x_3$: ($\mathrm{ssList}(x_3)$ and $\mathrm{app}(\mathrm{cons}(x_1, \mathrm{nil}), x_3) = w$))) or $\exists x_4$: ($\mathrm{ssItem}(x_4)$ and $\exists x_5$: ($\mathrm{ssList}(x_5)$ and $\mathrm{app}(\mathrm{cons}(x_4, \mathrm{nil}), x_5) =$ z and $\exists x_6$: ($\mathrm{ssList}(x_6)$ and $\mathrm{app}(x_6, \mathrm{cons}(x_4, \mathrm{nil})) = w$))))) or $\forall x_7$: ($\neg\,\mathrm{ssItem}(x_7)$ or $\neg\,\mathrm{memberP}(u, x_7)$ or $\mathrm{memberP}(v, x_7)$) or x and $\mathrm{nil} = w$))))) $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC399-1.p cond_subst_x_run_eq_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{app}(\mathrm{sk}_5, \mathrm{sk}_3), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{equalelemsP}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
($\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_5$ and $\mathrm{ssList}(c)$) $\Rightarrow$ $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), c) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_con}$
($\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_6$ and $\mathrm{ssList}(c)$) $\Rightarrow$ $\mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})) \neq \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_con}$
$\mathrm{ssItem}(\mathrm{sk}_7)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$

$\text{memberP}(\text{sk}_1, \text{sk}_7)$ cnf(co1_{14}, negated_conjecture)
$\neg\, \text{memberP}(\text{sk}_2, \text{sk}_7)$ cnf(co1_{15}, negated_conjecture)
$\text{nil} = \text{sk}_3 \Rightarrow \text{nil} = \text{sk}_4$ cnf(co1_{16}, negated_conjecture)

SWC400+1.p cond_subst_x_run_ord
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\, \text{segmentP}(x, w)$ or $\neg$ totalorde
($\neg\, \text{memberP}(u, y)$ or $\text{memberP}(v, y)$))))))) fof(co_1, conjecture)

SWC400-1.p cond_subst_x_run_ord
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\text{ssList}(\text{sk}_1)$ cnf(co1_1, negated_conjecture)
$\text{ssList}(\text{sk}_2)$ cnf(co1_2, negated_conjecture)
$\text{ssList}(\text{sk}_3)$ cnf(co1_3, negated_conjecture)
$\text{ssList}(\text{sk}_4)$ cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
$\text{segmentP}(\text{sk}_4, \text{sk}_3)$ cnf(co1_7, negated_conjecture)
$\text{totalorderedP}(\text{sk}_3)$ cnf(co1_8, negated_conjecture)
$\text{ssItem}(\text{sk}_5)$ cnf(co1_9, negated_conjecture)
$\text{memberP}(\text{sk}_1, \text{sk}_5)$ cnf(co1_{10}, negated_conjecture)
$\neg\, \text{memberP}(\text{sk}_2, \text{sk}_5)$ cnf(co1_{11}, negated_conjecture)

SWC401+1.p cond_subst_x_run_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg\, \text{segmentP}(x, w)$ or $\neg$ totalorde
($\neg\, \text{memberP}(u, z)$ or $\text{memberP}(v, z)$))))))) fof(co_1, conjecture)

SWC401-1.p cond_subst_x_run_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\text{ssList}(\text{sk}_1)$ cnf(co1_1, negated_conjecture)
$\text{ssList}(\text{sk}_2)$ cnf(co1_2, negated_conjecture)
$\text{ssList}(\text{sk}_3)$ cnf(co1_3, negated_conjecture)
$\text{ssList}(\text{sk}_4)$ cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
$\text{segmentP}(\text{sk}_4, \text{sk}_3)$ cnf(co1_7, negated_conjecture)
$\text{totalorderedP}(\text{sk}_3)$ cnf(co1_8, negated_conjecture)
(ssList(a) and neq(sk_3, a) and $\text{segmentP}(\text{sk}_4, a)$ and $\text{segmentP}(a, \text{sk}_3)$) $\Rightarrow$ $\neg\, \text{totalorderedP}(a)$ cnf(co1_9, negated_conjectu
$\text{ssItem}(\text{sk}_5)$ cnf(co1_{10}, negated_conjecture)
$\text{memberP}(\text{sk}_1, \text{sk}_5)$ cnf(co1_{11}, negated_conjecture)
$\neg\, \text{memberP}(\text{sk}_2, \text{sk}_5)$ cnf(co1_{12}, negated_conjecture)

SWC402+1.p cond_subst_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$
$\forall z$: ($\neg$ ssList(z) or $\text{app}(\text{app}(y, w), z) \neq x$ or $\neg\, \text{totalorderedP}(w)$ or $\exists x_1$: (ssItem(x_1) and $\exists x_2$: (ssList(x_2) and $\text{app}(x_2, \text{cons}(x_1$

y and $\exists x_3$: (ssItem(x_3) and $\exists x_4$: (ssList(x_4) and app(cons(x_3, nil), x_4) = w and $x_1 \leq x_3$)))) or $\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ssI
z and $\exists x_7$: (ssItem(x_7) and $\exists x_8$: (ssList(x_8) and app(x_8, cons(x_7, nil)) = w and $x_7 \leq x_5$)))))) or $\forall x_9$: ($\neg$ ssItem(x_9) or $\neg$ mem
x and nil = w))))) fof(co_1, conjecture)

SWC402-1.p cond_subst_x_run_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
ssList(sk_5) cnf($co1_7$, negated_conjecture)
ssList(sk_6) cnf($co1_8$, negated_conjecture)
app(app(sk_5, sk_3), sk_6) = sk_4 cnf($co1_9$, negated_conjecture)
totalorderedP(sk_3) cnf($co1_{10}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk_5 and ssItem(c) and ssList(d) and app(cons(c, nil), d) = sk_3) $\Rightarrow$
$\neg\, a \leq c$ cnf($co1_{11}$, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_6 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$
$\neg\, c \leq a$ cnf($co1_{12}$, negated_conjecture)
ssItem(sk_7) cnf($co1_{13}$, negated_conjecture)
memberP(sk_1, sk_7) cnf($co1_{14}$, negated_conjecture)
$\neg$ memberP(sk_2, sk_7) cnf($co1_{15}$, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf($co1_{16}$, negated_conjecture)

SWC403+1.p cond_subst_x_run_strict_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ segmentP(x, w) or $\neg$ strictorde
($\neg$ memberP(u, z) or memberP(v, z)))))))) fof(co_1, conjecture)

SWC403-1.p cond_subst_x_run_strict_ord_max1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
segmentP(sk_4, sk_3) cnf($co1_7$, negated_conjecture)
strictorderedP(sk_3) cnf($co1_8$, negated_conjecture)
(ssList(a) and neq(sk_3, a) and segmentP(sk_4, a) and segmentP(a, sk_3)) $\Rightarrow$ $\neg$ strictorderedP(a) cnf($co1_9$, negated_conjectu
ssItem(sk_5) cnf($co1_{10}$, negated_conjecture)
memberP(sk_1, sk_5) cnf($co1_{11}$, negated_conjecture)
$\neg$ memberP(sk_2, sk_5) cnf($co1_{12}$, negated_conjecture)

SWC404+1.p cond_subst_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\forall y$: (ssList(y) $\Rightarrow$
$\forall z$: (ssList(z) $\Rightarrow$ (app(app(y, w), z) $\neq x$ or $\neg$ strictorderedP(w) or $\exists x_1$: (ssItem(x_1) and $\exists x_2$: (ssList(x_2) and app(x_2, cons(x_1

y and $\exists x_3$: (ssItem(x_3) and $\exists x_4$: (ssList(x_4) and app(cons(x_3, nil), x_4) = w and lt(x_1, x_3))))) or $\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ss
z and $\exists x_7$: (ssItem(x_7) and $\exists x_8$: (ssList(x_8) and app(x_8, cons(x_7, nil)) = w and lt(x_7, x_5)))))))) or $\forall x_9$: (ssItem(x_9) $\Rightarrow$
($\neg$ memberP(u, x_9) or memberP(v, x_9))) or (nil $\neq$ x and nil = w)))))) fof(co_1, conjecture)

SWC404-1.p cond_subst_x_run_strict_ord_max2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
ssList(sk_5) cnf(co1_7, negated_conjecture)
ssList(sk_6) cnf(co1_8, negated_conjecture)
app(app(sk_5, sk_3), sk_6) = sk_4 cnf(co1_9, negated_conjecture)
strictorderedP(sk_3) cnf(co1_{10}, negated_conjecture)
(ssItem(a) and ssList(b) and app(b, cons(a, nil)) = sk_5 and ssItem(c) and ssList(d) and app(cons(c, nil), d) = sk_3) $\Rightarrow$
$\neg$ lt(a, c) cnf(co1_{11}, negated_conjecture)
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_6 and ssItem(c) and ssList(d) and app(d, cons(c, nil)) = sk_3) $\Rightarrow$
$\neg$ lt(c, a) cnf(co1_{12}, negated_conjecture)
ssItem(sk_7) cnf(co1_{13}, negated_conjecture)
memberP(sk_1, sk_7) cnf(co1_{14}, negated_conjecture)
$\neg$ memberP(sk_2, sk_7) cnf(co1_{15}, negated_conjecture)
nil = sk_3 $\Rightarrow$ nil = sk_4 cnf(co1_{16}, negated_conjecture)

SWC405+1.p cond_subst_x_set_eq
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and ((¬ memberP
($\neg$ memberP(u, z) or memberP(v, z)))))))) fof(co_1, conjecture)

SWC405-1.p cond_subst_x_set_eq
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf(co1_1, negated_conjecture)
ssList(sk_2) cnf(co1_2, negated_conjecture)
ssList(sk_3) cnf(co1_3, negated_conjecture)
ssList(sk_4) cnf(co1_4, negated_conjecture)
$\text{sk}_2 = \text{sk}_4$ cnf(co1_5, negated_conjecture)
$\text{sk}_1 = \text{sk}_3$ cnf(co1_6, negated_conjecture)
(ssItem(a) and memberP(sk_3, a)) $\Rightarrow$ memberP(sk_4, a) cnf(co1_7, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ memberP(sk_3, a) cnf(co1_8, negated_conjecture)
ssItem(sk_5) cnf(co1_9, negated_conjecture)
memberP(sk_1, sk_5) cnf(co1_{10}, negated_conjecture)
$\neg$ memberP(sk_2, sk_5) cnf(co1_{11}, negated_conjecture)

SWC406+1.p cond_subst_x_set_min_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and ((¬ memberP
($\neg$ memberP(x, z) or $\neg$ $z \leq y$ or $y = z$)) and memberP(x, y)) or (memberP(w, y) and ($\neg$ memberP(x, y) or $\exists z$: (ssItem(z) and
z and memberP(x, z) and $z \leq y$))))) or $\forall x_1$: (ssItem(x_1) $\Rightarrow$ ($\neg$ memberP(u, x_1) or memberP(v, x_1)))))))) fof(co_1, conject

SWC406-1.p cond_subst_x_set_min_elems
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)) \Rightarrow (\mathrm{memberP}(\mathrm{sk}_3, a)$ or $\mathrm{ssItem}(\mathrm{sk}_5(a)))$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)) \Rightarrow (\mathrm{memberP}(\mathrm{sk}_3, a)$ or $\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_5(a)))$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)) \Rightarrow (\mathrm{memberP}(\mathrm{sk}_3, a)$ or $\mathrm{sk}_5(a) \leq a)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $a = \mathrm{sk}_5(a)$ and $\mathrm{memberP}(\mathrm{sk}_4, a)) \Rightarrow \mathrm{memberP}(\mathrm{sk}_3, a)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_3, a)) \Rightarrow \mathrm{memberP}(\mathrm{sk}_4, a)$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{memberP}(\mathrm{sk}_3, a)$ and $\mathrm{ssItem}(b)$ and $\mathrm{memberP}(\mathrm{sk}_4, b)$ and $b \leq a) \Rightarrow a = b$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC407+1.p cond_subst_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\neg\, \mathrm{memberP}(u, y)$ or $\mathrm{memberP}(v, y)))$ or $(\forall z$: $(\mathrm{ssItem}(z) \Rightarrow (\mathrm{cons}(z, \mathrm{nil}) \neq w$ or $\neg\, \mathrm{memberP}(x, z)))$ and $(\mathrm{nil} \neq x$ or $\mathrm{nil} \neq w)))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC407-1.p cond_subst_x_some_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_6, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{cons}(\mathrm{sk}_6, \mathrm{nil}) = \mathrm{sk}_3$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_4, \mathrm{sk}_6)$ or $\mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$

SWC408+1.p cond_superst_x_double
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (\mathrm{app}(x, x) \neq w$ or $v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\neg\, \mathrm{memberP}(v, y)$ or $\mathrm{memberP}(u, y)))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC408-1.p cond_superst_x_double

Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_4, \mathrm{sk}_4) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$

SWC409+1.p cond_superst_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\exists y$: $(\mathrm{ssItem}(y)$ and $\exists z$: $(\mathrm{ssList}(z$ w and $\mathrm{app}(\mathrm{cons}(y, \mathrm{nil}), z) = x))$ or $\forall x_1$: $(\mathrm{ssItem}(x_1) \Rightarrow (\neg\, \mathrm{memberP}(v, x_1)$ or $\mathrm{memberP}(u, x_1)))$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC409-1.p cond_superst_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{app}(\mathrm{cons}(a, \mathrm{nil}), b) = \mathrm{sk}_4) \Rightarrow \mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$\mathrm{memberP}(\mathrm{sk}_2, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\neg\, \mathrm{memberP}(\mathrm{sk}_1, \mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$

SWC410+1.p cond_superst_x_rot_r_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\forall y$: $(\mathrm{ssItem}(y) \Rightarrow (\neg\, \mathrm{memberP}(v, y)$ or $\mathrm{memberP}(u, y)))$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $(\mathrm{neq}(x, \mathrm{nil})$ and $(\neg\, \mathrm{neq}(w, \mathrm{nil})$ or $\exists z$: $(\mathrm{ssList}(z)$ and $x \neq z$ and $\exists x_1$: $(\mathrm{ssList}(x_1)$ and $\exists x_2$: $(\mathrm{ssList}(x_2)$ and $\mathrm{tl}(w) = x_1$ and $\mathrm{app}(x_1, x_2) = z$ and $\exists x_3$: $(\mathrm{ssItem}(x_3)$ and $\mathrm{cons}(x_3, \mathrm{nil}) = x_2$ and $\mathrm{hd}(w) = x_3$ and $\mathrm{neq}(\mathrm{nil}, w))$ and $\mathrm{neq}(\mathrm{nil}, w)))))))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC410-1.p cond_superst_x_rot_r_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$

$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
ssItem(sk_5) cnf($\mathrm{co1}_7$, negated_conjecture)
memberP($\mathrm{sk}_2, \mathrm{sk}_5$) cnf($\mathrm{co1}_8$, negated_conjecture)
$\neg$ memberP($\mathrm{sk}_1, \mathrm{sk}_5$) cnf($\mathrm{co1}_9$, negated_conjecture)
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ cnf($\mathrm{co1}_{10}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_3, nil) cnf($\mathrm{co1}_{11}$, negated_conjecture)
(neq(sk_4, nil) and ssList(a) and ssList(b) and ssList(c) and tl(sk_3) = b and app(b, c) = a and ssItem(d) and cons(d, nil) = c and hd(sk_3) = d and neq(nil, sk_3) and neq(nil, sk_3)) $\Rightarrow$ $\mathrm{sk}_4 = a$ cnf($\mathrm{co1}_{12}$, negated_conjecture)

SWC411+1.p cond_superst_x_superst
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\exists y$: (ssItem(y) and $\neg$ memberP(
($\neg$ memberP(v, z) or memberP(u, z))))))) fof(co_1, conjecture)

SWC411-1.p cond_superst_x_superst
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
(ssItem(a) and memberP(sk_4, a)) $\Rightarrow$ memberP(sk_3, a) cnf($\mathrm{co1}_7$, negated_conjecture)
ssItem(sk_5) cnf($\mathrm{co1}_8$, negated_conjecture)
memberP($\mathrm{sk}_2, \mathrm{sk}_5$) cnf($\mathrm{co1}_9$, negated_conjecture)
$\neg$ memberP($\mathrm{sk}_1, \mathrm{sk}_5$) cnf($\mathrm{co1}_{10}$, negated_conjecture)

SWC412+1.p cond_swap_ends_x_swap_ends
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or (($\exists y$: (ssItem(y) and $\exists z$: (ssItem
x))) or $\forall x_2$: (ssItem(x_2) $\Rightarrow$ $\forall x_3$: (ssItem(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $\Rightarrow$ app(app(cons(x_2, nil), cons(x_3, nil)), x_4) $\neq$
v)))) and ($\exists x_5$: (ssItem(x_5) and $\exists x_6$: (ssItem(x_6) and $\exists x_7$: (ssList(x_7) and app(app(cons(x_6, nil), x_7), cons(x_5, nil)) $\neq$
w and app(app(cons(x_5, nil), x_7), cons(x_6, nil)) = x))) or $\forall x_8$: (ssItem(x_8) $\Rightarrow$ $\forall x_9$: (ssItem(x_9) $\Rightarrow$ $\forall x_{10}$: (ssList(x_{10}) $\Rightarrow$
app(app(cons(x_8, nil), cons(x_9, nil)), x_{10}) $\neq$ v))) or $\forall x_{11}$: (ssItem(x_{11}) $\Rightarrow$ $\forall x_{12}$: (ssItem(x_{12}) $\Rightarrow$ $\forall x_{13}$: ($\neg$ ssList(x_{13}) or app(a
v or app(app(cons(x_{12}, nil), x_{13}), cons(x_{11}, nil)) = u))))))))) fof(co_1, conjecture)

SWC413+1.p cond_swap_tos_x_swap_tos
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\exists y$: (ssItem(y) and $\exists z$: (ssItem
v and app(app(cons(z, nil), cons(y, nil)), x_1) = u))) or $\forall x_2$: (ssItem(x_2) $\Rightarrow$ $\forall x_3$: (ssItem(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $\Rightarrow$
app(app(cons(x_2, nil), cons(x_3, nil)), x_4) $\neq$ v))) or $\forall x_5$: (ssItem(x_5) $\Rightarrow$ $\forall x_6$: (ssItem(x_6) $\Rightarrow$ $\forall x_7$: (ssList(x_7) $\Rightarrow$
(app(app(cons(x_5, nil), cons(x_6, nil)), x_7) $\neq$ x or app(app(cons(x_6, nil), cons(x_5, nil)), x_7) $\neq$ w))))) and ($\exists x_8$: (ssItem(x_8) and
x))) or $\forall x_2$: (ssItem(x_2) $\Rightarrow$ $\forall x_3$: (ssItem(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $\Rightarrow$ app(app(cons(x_2, nil), cons(x_3, nil)), x_4) $\neq$
v)))))))))) fof(co_1, conjecture)

SWC414+1.p cond_swap_x_swap_tos
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or (($\exists y$: (ssItem(y) and $\exists z$: (ssItem
v and app(app(app(app(x_1, cons(z, nil)), x_2), cons(y, nil)), x_3) = u))))) or $\forall x_4$: (ssItem(x_4) $\Rightarrow$ $\forall x_5$: (ssItem(x_5) $\Rightarrow$
$\forall x_6$: (ssList(x_6) $\Rightarrow$ app(app(cons(x_4, nil), cons(x_5, nil)), x_6) $\neq$ v))) or $\forall x_7$: (ssItem(x_7) $\Rightarrow$ $\forall x_8$: (ssItem(x_8) $\Rightarrow$
$\forall x_9$: ($\neg$ ssList(x_9) or app(app(cons(x_7, nil), cons(x_8, nil)), x_9) $\neq$ x or app(app(cons(x_8, nil), cons(x_7, nil)), x_9) $\neq$ w)))) and ($\exists x$
x))) or $\forall x_{13}$: (ssItem(x_{13}) $\Rightarrow$ $\forall x_{14}$: (ssItem(x_{14}) $\Rightarrow$ $\forall x_{15}$: (ssList(x_{15}) $\Rightarrow$ app(app(cons(x_{13}, nil), cons(x_{14}, nil)), x_{15}) $\neq$
v))))))))) fof(co$_1$, conjecture)

SWC415+1.p cond_tail1_x_tail1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\exists y$: (ssList(y) a
y and tl(x) = y and neq(nil, x)) or $\exists z$: (ssList(z) and tl(v) = z and $u = z$ and neq(nil, v))) and ($\neg$ neq(v, nil) or neq(x, nil))))

SWC415-1.p cond_tail1_x_tail1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
neq(sk$_2$, nil) or neq(sk$_2$, nil) cnf(co1$_7$, negated_conjecture)
neq(sk$_4$, nil) $\Rightarrow$ neq(sk$_2$, nil) cnf(co1$_8$, negated_conjecture)
(ssList(a) and tl(sk$_4$) = a and neq(nil, sk$_4$)) $\Rightarrow$ (sk$_3$ = a or neq(sk$_2$, nil)) cnf(co1$_9$, negated_conjecture)
(ssList(a) and tl(sk$_2$) = a and sk$_1$ = a and neq(nil, sk$_2$)) $\Rightarrow$ neq(sk$_2$, nil) cnf(co1$_{10}$, negated_conjecture)
(ssList(a) and tl(sk$_4$) = a and neq(nil, sk$_4$) and neq(sk$_4$, nil)) $\Rightarrow$ sk$_3$ = a cnf(co1$_{11}$, negated_conjecture)
(ssList(a) and tl(sk$_2$) = a and sk$_1$ = a and neq(nil, sk$_2$)) $\Rightarrow$ $\neg$ neq(sk$_4$, nil) cnf(co1$_{12}$, negated_conjecture)

SWC416+1.p cond_tail2_x_tail3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or (($\neg$ neq(v, nil) or $\exists y$: (ssList(y) a
y and $\exists z$: (ssList(z) and app(z, u) = y and $\exists x_1$: (ssItem(x_1) and cons(x_1, nil) = z and hd(v) = x_1 and neq(nil, v)))) or $\forall x_2$: (
app(cons(x_2, nil), w) $\neq$ x)) and ($\neg$ neq(v, nil) or neq(x, nil)))))))) fof(co$_1$, conjecture)

SWC416-1.p cond_tail2_x_tail3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk$_1$) cnf(co1$_1$, negated_conjecture)
ssList(sk$_2$) cnf(co1$_2$, negated_conjecture)
ssList(sk$_3$) cnf(co1$_3$, negated_conjecture)
ssList(sk$_4$) cnf(co1$_4$, negated_conjecture)
sk$_2$ = sk$_4$ cnf(co1$_5$, negated_conjecture)
sk$_1$ = sk$_3$ cnf(co1$_6$, negated_conjecture)
neq(sk$_2$, nil) or neq(sk$_2$, nil) cnf(co1$_7$, negated_conjecture)
neq(sk$_4$, nil) $\Rightarrow$ neq(sk$_2$, nil) cnf(co1$_8$, negated_conjecture)
(ssList(a) and sk$_2$ = a and ssList(b) and app(b, sk$_1$) = a and ssItem(c) and cons(c, nil) = b and hd(sk$_2$) = c and neq(nil, sk$_2$)
neq(sk$_2$, nil) cnf(co1$_9$, negated_conjecture)
ssItem(sk$_5$) or neq(sk$_2$, nil) cnf(co1$_{10}$, negated_conjecture)
app(cons(sk$_5$, nil), sk$_3$) = sk$_4$ or neq(sk$_2$, nil) cnf(co1$_{11}$, negated_conjecture)
(ssList(a) and sk$_2$ = a and ssList(b) and app(b, sk$_1$) = a and ssItem(c) and cons(c, nil) = b and hd(sk$_2$) = c and neq(nil, sk$_2$)
$\neg$ neq(sk$_4$, nil) cnf(co1$_{12}$, negated_conjecture)

$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_3) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$

SWC417+1.p cond_turn_x_rot_l2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $((\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssItem}(y)$
v and $\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), z) = u))))$ or $\forall x_2$: $(\mathrm{ssItem}(x_2) \Rightarrow \forall x_3$: $(\mathrm{ssList}(x_3) \Rightarrow (\mathrm{app}(\mathrm{cons}(x_2, \mathrm{nil}), x_3) \neq$
x or $\mathrm{app}(x_3, \mathrm{cons}(x_2, \mathrm{nil})) \neq w))))$ and $(\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\mathrm{neq}(x, \mathrm{nil})))))))$ $\mathrm{fof}(\mathrm{co}_1, \mathrm{conjecture})$

SWC417-1.p cond_turn_x_rot_l2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_8, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_2$ and $\mathrm{app}(\mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})), b) = \mathrm{sk}_1) \Rightarrow$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$
$\mathrm{ssItem}(\mathrm{sk}_5)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{10}, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_6)$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{11}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_4$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{12}, \mathrm{negated\_conjecture})$
$\mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_3$ or $\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{13}, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_2$ and $\mathrm{app}(\mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})), b) = \mathrm{sk}_1) \Rightarrow$
$\neg\, \mathrm{neq}(\mathrm{sk}_4, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_{14}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssItem}(\mathrm{sk}_5)$ $\mathrm{cnf}(\mathrm{co1}_{15}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{ssList}(\mathrm{sk}_6)$ $\mathrm{cnf}(\mathrm{co1}_{16}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{cons}(\mathrm{sk}_5, \mathrm{nil}), \mathrm{sk}_6) = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_{17}, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_4, \mathrm{nil}) \Rightarrow \mathrm{app}(\mathrm{sk}_6, \mathrm{cons}(\mathrm{sk}_5, \mathrm{nil})) = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_{18}, \mathrm{negated\_conjecture})$

SWC418+1.p cond_turn_x_rot_l_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: $(\mathrm{ssList}(u) \Rightarrow \forall v$: $(\mathrm{ssList}(v) \Rightarrow \forall w$: $(\mathrm{ssList}(w) \Rightarrow \forall x$: $(\mathrm{ssList}(x) \Rightarrow (v \neq x$ or $u \neq w$ or $\neg\, \mathrm{neq}(v, \mathrm{nil})$ or $\exists y$: $(\mathrm{ssItem}(y)$ a
v and $\mathrm{app}(\mathrm{app}(x_1, \mathrm{cons}(y, \mathrm{nil})), z) = u))))$ or $(\mathrm{nil} \neq w$ and $\mathrm{nil} = x)$ or $(\exists x_2$: $(\mathrm{ssList}(x_2)$ and $w \neq x_2$ and $\exists x_3$: $(\mathrm{ssList}(x_3)$ and
x_3 and $\mathrm{app}(x_3, x_4) = x_2$ and $\exists x_5$: $(\mathrm{ssItem}(x_5)$ and $\mathrm{cons}(x_5, \mathrm{nil}) = x_4$ and $\mathrm{hd}(x) = x_5$ and $\mathrm{neq}(\mathrm{nil}, x))$ and $\mathrm{neq}(\mathrm{nil}, x))))$ and

SWC418-1.p cond_turn_x_rot_l_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
$\mathrm{ssList}(\mathrm{sk}_1)$ $\mathrm{cnf}(\mathrm{co1}_1, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_2)$ $\mathrm{cnf}(\mathrm{co1}_2, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_3)$ $\mathrm{cnf}(\mathrm{co1}_3, \mathrm{negated\_conjecture})$
$\mathrm{ssList}(\mathrm{sk}_4)$ $\mathrm{cnf}(\mathrm{co1}_4, \mathrm{negated\_conjecture})$
$\mathrm{sk}_2 = \mathrm{sk}_4$ $\mathrm{cnf}(\mathrm{co1}_5, \mathrm{negated\_conjecture})$
$\mathrm{sk}_1 = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_6, \mathrm{negated\_conjecture})$
$\mathrm{neq}(\mathrm{sk}_2, \mathrm{nil})$ $\mathrm{cnf}(\mathrm{co1}_7, \mathrm{negated\_conjecture})$
$(\mathrm{ssItem}(a)$ and $\mathrm{ssList}(b)$ and $\mathrm{ssList}(c)$ and $\mathrm{app}(\mathrm{app}(b, \mathrm{cons}(a, \mathrm{nil})), c) = \mathrm{sk}_2) \Rightarrow \mathrm{app}(\mathrm{app}(c, \mathrm{cons}(a, \mathrm{nil})), b) \neq \mathrm{sk}_1$ $\mathrm{cnf}(\mathrm{co1}$
$\mathrm{nil} = \mathrm{sk}_4 \Rightarrow \mathrm{nil} = \mathrm{sk}_3$ $\mathrm{cnf}(\mathrm{co1}_9, \mathrm{negated\_conjecture})$

(ssList(a) and ssList(b) and ssList(c) and tl(sk_4) = b and app(b, c) = a and ssItem(d) and cons(d, nil) = c and hd(sk_4) = d and neq(nil, sk_4) and neq(nil, sk_4) and neq(sk_4, nil)) $\Rightarrow$ $\mathrm{sk}_3 = a$ cnf($\mathrm{co1}_{10}$, negated_conjecture)

SWC419+1.p cond_turn_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssItem(y) a
v and app(app(x_1, cons(y, nil)), z) = u))) or (nil $\neq w$ and nil = x) or ($\forall x_2$: (ssItem(x_2) $\Rightarrow$ $\forall x_3$: ($\neg$ ssList(x_3) or app(cons(x_2
x or app(x_3, cons(x_2, nil)) $\neq w$)) and neq(x, nil)))))) fof(co_1, conjecture)

SWC419-1.p cond_turn_x_rot_l_total2
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_2) $\Rightarrow$ app(app(c, cons(a, nil)), b) $\neq \mathrm{sk}_1$ cnf(co1
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_9$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) cnf($\mathrm{co1}_{10}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_6) cnf($\mathrm{co1}_{11}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(cons(sk_5, nil), sk_6) = sk_4 cnf($\mathrm{co1}_{12}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(sk_6, cons(sk_5, nil)) = sk_3 cnf($\mathrm{co1}_{13}$, negated_conjecture)

SWC420+1.p cond_turn_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: ($\neg$ ssList(x) or $v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssItem(y) a
v and app(app(x_1, cons(y, nil)), z) = u))) or $\exists x_2$: (ssItem(x_2) and $\exists x_3$: (ssList(x_3) and app(x_3, cons(x_2, nil)) $\neq w$ and app(co
x)) or (nil $\neq w$ and nil = x))))) fof(co_1, conjecture)

SWC420-1.p cond_turn_x_rot_l_total3
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($\mathrm{co1}_1$, negated_conjecture)
ssList(sk_2) cnf($\mathrm{co1}_2$, negated_conjecture)
ssList(sk_3) cnf($\mathrm{co1}_3$, negated_conjecture)
ssList(sk_4) cnf($\mathrm{co1}_4$, negated_conjecture)
$\mathrm{sk}_2 = \mathrm{sk}_4$ cnf($\mathrm{co1}_5$, negated_conjecture)
$\mathrm{sk}_1 = \mathrm{sk}_3$ cnf($\mathrm{co1}_6$, negated_conjecture)
neq(sk_2, nil) cnf($\mathrm{co1}_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_2) $\Rightarrow$ app(app(c, cons(a, nil)), b) $\neq \mathrm{sk}_1$ cnf(co1
(ssItem(a) and ssList(b) and app(cons(a, nil), b) = sk_4) $\Rightarrow$ app(b, cons(a, nil)) = sk_3 cnf($\mathrm{co1}_9$, negated_conjecture)
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($\mathrm{co1}_{10}$, negated_conjecture)

SWC421+1.p cond_turn_x_rot_r_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')

$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or $\neg$ neq(v, nil) or $\exists y$: (ssItem(y) a
v and app(app(x_1, cons(y, nil)), z) = u))) or (nil $\neq w$ and nil = x) or (neq(x, nil) and ($\neg$ neq(w, nil) or $\exists x_2$: (ssList(x_2) and x
x_2 and $\exists x_3$: (ssList(x_3) and $\exists x_4$: (ssList(x_4) and tl(w) = x_3 and app(x_3, x_4) = x_2 and $\exists x_5$: (ssItem(x_5) and cons(x_5, nil) =
x_4 and hd(w) = x_5 and neq(nil, w)) and neq(nil, w)))))))))) fof(co_1, conjecture)

SWC421-1.p cond_turn_x_rot_r_total1
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
neq(sk_2, nil) cnf($co1_7$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_2) $\Rightarrow$ app(app(c, cons(a, nil)), b) $\neq sk_1$ cnf(co1
nil = sk_4 $\Rightarrow$ nil = sk_3 cnf($co1_9$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_3, nil) cnf($co1_{10}$, negated_conjecture)
(neq(sk_4, nil) and ssList(a) and ssList(b) and ssList(c) and tl(sk_3) = b and app(b, c) = a and ssItem(d) and cons(d, nil) =
c and hd(sk_3) = d and neq(nil, sk_3) and neq(nil, sk_3)) $\Rightarrow$ $sk_4 = a$ cnf($co1_{11}$, negated_conjecture)

SWC422+1.p cond_turn_x_turn
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001+0.ax')
$\forall u$: (ssList(u) $\Rightarrow$ $\forall v$: (ssList(v) $\Rightarrow$ $\forall w$: (ssList(w) $\Rightarrow$ $\forall x$: (ssList(x) $\Rightarrow$ ($v \neq x$ or $u \neq w$ or ((¬ neq(v, nil) or $\exists y$: (ssItem(y)
v and app(app(x_1, cons(y, nil)), z) = u))) or $\forall x_2$: (ssItem(x_2) $\Rightarrow$ $\forall x_3$: (ssList(x_3) $\Rightarrow$ $\forall x_4$: (ssList(x_4) $\Rightarrow$
(app(app(x_3, cons(x_2, nil)), x_4) $\neq x$ or app(app(x_4, cons(x_2, nil)), x_3) $\neq w$))))) and (¬ neq(v, nil) or neq(x, nil)))))))) fof(c

SWC422-1.p cond_turn_x_turn
Find components in a software library that match a given target specification given in first-order logic. The components are specified in first-order logic as well. The problem represents a test of one library module specification against a target specification.
include('Axioms/SWC001-0.ax')
ssList(sk_1) cnf($co1_1$, negated_conjecture)
ssList(sk_2) cnf($co1_2$, negated_conjecture)
ssList(sk_3) cnf($co1_3$, negated_conjecture)
ssList(sk_4) cnf($co1_4$, negated_conjecture)
$sk_2 = sk_4$ cnf($co1_5$, negated_conjecture)
$sk_1 = sk_3$ cnf($co1_6$, negated_conjecture)
neq(sk_2, nil) or neq(sk_2, nil) cnf($co1_7$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ neq(sk_2, nil) cnf($co1_8$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_2 and app(app(c, cons(a, nil)), b) = sk_1) $\Rightarrow$
neq(sk_2, nil) cnf($co1_9$, negated_conjecture)
ssItem(sk_5) or neq(sk_2, nil) cnf($co1_{10}$, negated_conjecture)
ssList(sk_6) or neq(sk_2, nil) cnf($co1_{11}$, negated_conjecture)
ssList(sk_7) or neq(sk_2, nil) cnf($co1_{12}$, negated_conjecture)
app(app(sk_6, cons(sk_5, nil)), sk_7) = sk_4 or neq(sk_2, nil) cnf($co1_{13}$, negated_conjecture)
app(app(sk_7, cons(sk_5, nil)), sk_6) = sk_3 or neq(sk_2, nil) cnf($co1_{14}$, negated_conjecture)
(ssItem(a) and ssList(b) and ssList(c) and app(app(b, cons(a, nil)), c) = sk_2 and app(app(c, cons(a, nil)), b) = sk_1) $\Rightarrow$
¬ neq(sk_4, nil) cnf($co1_{15}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssItem(sk_5) cnf($co1_{16}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_6) cnf($co1_{17}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ ssList(sk_7) cnf($co1_{18}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(app(sk_6, cons(sk_5, nil)), sk_7) = sk_4 cnf($co1_{19}$, negated_conjecture)
neq(sk_4, nil) $\Rightarrow$ app(app(sk_7, cons(sk_5, nil)), sk_6) = sk_3 cnf($co1_{20}$, negated_conjecture)

SWC423+1.p List specification

Components in a software library specified in first-order logic
include('Axioms/SWC001+0.ax')

SWC423-1.p List specification
Components in a software library specified in first-order logic
include('Axioms/SWC001-0.ax')

SWC425^7.p Conflict detection of 2 conceptual schemata (e.g. UML-schemata)
include('Axioms/LCL015^0.ax')
include('Axioms/LCL013^5.ax')
include('Axioms/LCL015^1.ax')
r: mu → $i → $o thf(r_type, type)
p: mu → $i → $o thf(p_type, type)
c: mu thf(c_type, type)
$\forall v$: $i: (exists_in_world@$c$@$v$) thf(existence_of_c_ax, axiom)
b: mu thf(b_type, type)
$\forall v$: $i: (exists_in_world@$b$@$v$) thf(existence_of_b_ax, axiom)
a: mu thf(a_type, type)
$\forall v$: $i: (exists_in_world@$a$@$v$) thf(existence_of_a_ax, axiom)
mvalid@(mand@(mor@(mnot@(r@a))@(r@b))@(mand@(mequiv@(r@c)@(r@a))@(mand@(mimplies@(r@a)@(mdia_s_4@(r@
mvalid@(mand@(mimplies@(p@a)@(p@b))@(mand@(mor@(p@c)@(mnot@(p@b)))@(mimplies@(mand@(p@a)@(p@b))@(mdi
mvalid@(mforall_ind@λx: mu: (mequiv@(p@x)@(r@x))) thf(integration_assertion, axiom)
mvalid@mfalse thf(con, conjecture)