

# t48\_scm\_halt (TMPbWCgaY-GRS2vDhdrdJBpcAZCbiH6ywSxf)

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Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_numbers : \iota$  be given. Let  $v5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_compos\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_scmfsa\_2 : \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v5\_funct\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_3 : \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_finset\_1 : \iota \Rightarrow o$  be given. Let  $v1\_afinsq\_1 : \iota \Rightarrow o$  be given. Let  $v2\_scm\_halt : \iota \Rightarrow o$  be given. Let  $v1\_ami\_2 : \iota \Rightarrow o$  be given. Let  $v1\_scmfsa\_m : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_scmfsa8b : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_numbers : \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r8\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_scmfsa6b : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_card\_1 : \iota \Rightarrow \iota$  be given. Let  $np\_7 : \iota$  be given. Let  $r1\_scm\_halt : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_scm\_halt : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_scmfsa8b : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_scmfsa8b : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_sfmastr2 : \iota \Rightarrow \iota$  be given. Let  $v1\_scm\_halt : \iota \Rightarrow o$  be given.

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v5\_relat\_1 \\
& X0 (u1\_compos\_1 k1\_scmf\_sa\_2)) \wedge ((v1\_funct\_1 X0) \wedge (v1\_partfun1 \\
& X0 k5\_numbers)))))) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\
& X1 (u1\_struct\_0 k1\_scmf\_sa\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& X1 (k2\_memstr\_0 np\_3 k1\_scmf\_sa\_2)) \wedge (v1\_partfun1 X1 (u1\_struct\_0 \\
& k1\_scmf\_sa\_2)))))) \Rightarrow (\forall X2.((\neg v1\_xboole\_0 X2) \wedge ((v1\_relat\_1 \\
& X2) \wedge ((v4\_relat\_1 X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 \\
& k1\_scmf\_sa\_2)) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_finset\_1 X2) \wedge (v1\_afinsq\_1 \\
& X2)))))) \Rightarrow (\forall X3.((\neg v1\_xboole\_0 X3) \wedge ((v1\_relat\_1 X3) \wedge \\
& ((v4\_relat\_1 X3 k5\_numbers) \wedge ((v5\_relat\_1 X3 (u1\_compos\_1 k1\_scmf\_sa\_2)) \wedge \\
& ((v1\_funct\_1 X3) \wedge ((v1\_finset\_1 X3) \wedge (v1\_afinsq\_1 X3)))))) \Rightarrow \\
& (\forall X4.((v1\_ami\_2 X4) \wedge ((\neg v1\_scmf\_sa\_m X4) \wedge (m1\_subset\_1 \\
& X4 (u1\_struct\_0 k1\_scmf\_sa\_2)))) \Rightarrow (((r1\_scm\_halt X3 X1 X0) \wedge (r2\_scm\_halt \\
& X3 X1 X0)) \Rightarrow ((r1\_xreal\_0 (k1\_funct\_1 X1 X4) k6\_numbers) \vee (r8\_pboole \\
& (u1\_struct\_0 k1\_scmf\_sa\_2) (k1\_scmf\_sa6b (k3\_scmf\_sa8b X4 X2 X3) \\
& X1 X0) (k1\_funct\_4 (k1\_scmf\_sa6b X3 X1 X0) (k7\_memstr\_0 np\_3 k1\_scmf\_sa\_2 \\
& (k2\_nat\_1 (k2\_nat\_1 (k2\_nat\_1 (k5\_card\_1 X2) (k5\_card\_1 X3)) ( \\
& k5\_card\_1 X3)) np\_7))))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v5\_relat\_1 \\
& X0 (u1\_compos\_1 k1\_scmf\_sa\_2)) \wedge ((v1\_funct\_1 X0) \wedge (v1\_partfun1 \\
& X0 k5\_numbers)))))) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\
& X1 (u1\_struct\_0 k1\_scmf\_sa\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& X1 (k2\_memstr\_0 np\_3 k1\_scmf\_sa\_2)) \wedge (v1\_partfun1 X1 (u1\_struct\_0 \\
& k1\_scmf\_sa\_2)))))) \Rightarrow (\forall X2.((\neg v1\_xboole\_0 X2) \wedge ((v1\_relat\_1 \\
& X2) \wedge ((v4\_relat\_1 X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 \\
& k1\_scmf\_sa\_2)) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_finset\_1 X2) \wedge (v1\_afinsq\_1 \\
& X2)))))) \Rightarrow (\forall X3.((\neg v1\_xboole\_0 X3) \wedge ((v1\_relat\_1 X3) \wedge \\
& ((v4\_relat\_1 X3 k5\_numbers) \wedge ((v5\_relat\_1 X3 (u1\_compos\_1 k1\_scmf\_sa\_2)) \wedge \\
& ((v1\_funct\_1 X3) \wedge ((v1\_finset\_1 X3) \wedge (v1\_afinsq\_1 X3)))))) \Rightarrow \\
& (\forall X4.((v1\_ami\_2 X4) \wedge ((\neg v1\_scmf\_sa\_m X4) \wedge (m1\_subset\_1 \\
& X4 (u1\_struct\_0 k1\_scmf\_sa\_2)))) \Rightarrow (((k1\_funct\_1 X1 X4 = k6\_numbers) \wedge \\
& ((r1\_scm\_halt X3 X1 X0) \wedge (r2\_scm\_halt X3 X1 X0)) \Rightarrow (r8\_pboole (u1\_struct\_0 \\
& k1\_scmf\_sa\_2) (k1\_scmf\_sa6b (k3\_scmf\_sa8b X4 X2 X3) X1 X0) (k1\_funct\_4 \\
& (k1\_scmf\_sa6b X3 X1 X0) (k7\_memstr\_0 np\_3 k1\_scmf\_sa\_2 (k2\_nat\_1 \\
& (k2\_nat\_1 (k2\_nat\_1 (k5\_card\_1 X2) (k5\_card\_1 X3)) (k5\_card\_1 \\
& X3)) np\_7))))))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v5\_relat\_1 \\
& X0 (u1\_compos\_1 k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X0) \wedge (v1\_partfun1 \\
& X0 k5\_numbers)))))) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\
& X1 (u1\_struct\_0 k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& X1 (k2\_memstr\_0 np\_3 k1\_scmfsa\_2)) \wedge (v1\_partfun1 X1 (u1\_struct\_0 \\
& k1\_scmfsa\_2)))))) \Rightarrow (\forall X2.((\neg v1\_xboole\_0 X2) \wedge ((v1\_relat\_1 \\
& X2) \wedge ((v4\_relat\_1 X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 \\
& k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_finset\_1 X2) \wedge (v1\_afinsq\_1 \\
& X2)))))) \Rightarrow (\forall X3.((\neg v1\_xboole\_0 X3) \wedge ((v1\_relat\_1 X3) \wedge \\
& ((v4\_relat\_1 X3 k5\_numbers) \wedge ((v5\_relat\_1 X3 (u1\_compos\_1 k1\_scmfsa\_2)) \wedge \\
& ((v1\_funct\_1 X3) \wedge ((v1\_finset\_1 X3) \wedge (v1\_afinsq\_1 X3)))))) \Rightarrow \\
& (\forall X4.((v1\_ami\_2 X4) \wedge ((\neg v1\_scmfsa\_m X4) \wedge (m1\_subset\_1 \\
& X4 (u1\_struct\_0 k1\_scmfsa\_2)))) \Rightarrow (((r1\_scm\_halt X2 X1 X0) \wedge (r2\_scm\_halt \\
& X2 X1 X0)) \Rightarrow ((r1\_xxreal\_0 k6\_numbers (k1\_funct\_1 X1 X4)) \vee (r8\_pboole \\
& (u1\_struct\_0 k1\_scmfsa\_2) (k1\_scmfsa6b (k3\_scmfsa8b X4 X2 X3) \\
& X1 X0) (k1\_funct\_4 (k1\_scmfsa6b X2 X1 X0) (k7\_memstr\_0 np\_3 k1\_scmfsa\_2 \\
& (k2\_nat\_1 (k2\_nat\_1 (k2\_nat\_1 (k5\_card\_1 X2) (k5\_card\_1 X3)) ( \\
& k5\_card\_1 X3)) np\_7))))))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v5\_relat\_1 \\
& X0 (u1\_compos\_1 k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X0) \wedge (v1\_partfun1 \\
& X0 k5\_numbers)))))) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\
& X1 (u1\_struct\_0 k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& X1 (k2\_memstr\_0 np\_3 k1\_scmfsa\_2)) \wedge (v1\_partfun1 X1 (u1\_struct\_0 \\
& k1\_scmfsa\_2)))))) \Rightarrow (\forall X2.((\neg v1\_xboole\_0 X2) \wedge ((v1\_relat\_1 \\
& X2) \wedge ((v4\_relat\_1 X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 \\
& k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_finset\_1 X2) \wedge ((v1\_afinsq\_1 \\
& X2) \wedge (v2\_scm\_halt X2)))))) \Rightarrow (\forall X3.((\neg v1\_xboole\_0 X3) \wedge \\
& ((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 X3 k5\_numbers) \wedge ((v5\_relat\_1 X3 \\
& (u1\_compos\_1 k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_finset\_1 \\
& X3) \wedge ((v1\_afinsq\_1 X3) \wedge (v2\_scm\_halt X3)))))) \Rightarrow (\forall X4. \\
& ((v1\_ami\_2 X4) \wedge ((\neg v1\_scmfsa\_m X4) \wedge (m1\_subset\_1 X4 (u1\_struct\_0 \\
& k1\_scmfsa\_2)))) \Rightarrow ((v2\_scm\_halt (k2\_scmfsa8b X4 X2 X3)) \wedge (((\neg r1\_xxreal\_0 \\
& (k1\_funct\_1 X1 X4) k6\_numbers) \Rightarrow (r8\_pboole (u1\_struct\_0 k1\_scmfsa\_2) \\
& (k1\_scmfsa6b (k2\_scmfsa8b X4 X2 X3) X1 X0) (k1\_funct\_4 (k1\_scmfsa6b \\
& X2 X1 X0) (k7\_memstr\_0 np\_3 k1\_scmfsa\_2 (k2\_nat\_1 (k2\_nat\_1 (k5\_card\_1 \\
& X2) (k5\_card\_1 X3)) np\_3)))))) \wedge ((r1\_xxreal\_0 (k1\_funct\_1 X1 X4) \\
& k6\_numbers) \Rightarrow (r8\_pboole (u1\_struct\_0 k1\_scmfsa\_2) (k1\_scmfsa6b \\
& (k2\_scmfsa8b X4 X2 X3) X1 X0) (k1\_funct\_4 (k1\_scmfsa6b X3 X1 X0) ( \\
& k7\_memstr\_0 np\_3 k1\_scmfsa\_2 (k2\_nat\_1 (k2\_nat\_1 (k5\_card\_1 \\
& X2) (k5\_card\_1 X3)) np\_3))))))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v5\_relat\_1 \\
& X0 (u1\_compos\_1 k1\_scmf\_sa\_2)) \wedge ((v1\_funct\_1 X0) \wedge (v1\_partfun1 \\
& X0 k5\_numbers)))) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\
& X1 (u1\_struct\_0 k1\_scmf\_sa\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& X1 (k2\_memstr\_0 np\_3 k1\_scmf\_sa\_2)) \wedge (v1\_partfun1 X1 (u1\_struct\_0 \\
& k1\_scmf\_sa\_2)))))) \Rightarrow (\forall X2.((\neg v1\_xboole\_0 X2) \wedge ((v1\_relat\_1 \\
& X2) \wedge ((v4\_relat\_1 X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 \\
& k1\_scmf\_sa\_2)) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_finset\_1 X2) \wedge ((v1\_afinsq\_1 \\
& X2) \wedge (v2\_scm\_halt X2)))))) \Rightarrow (\forall X3.((\neg v1\_xboole\_0 X3) \wedge \\
& ((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 X3 k5\_numbers) \wedge ((v5\_relat\_1 X3 \\
& (u1\_compos\_1 k1\_scmf\_sa\_2)) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_finset\_1 \\
& X3) \wedge ((v1\_afinsq\_1 X3) \wedge (v2\_scm\_halt X3)))))) \Rightarrow (\forall X4. \\
& ((v1\_ami\_2 X4) \wedge ((\neg v1\_scmf\_sa\_m X4) \wedge (m1\_subset\_1 X4 (u1\_struct\_0 \\
& k1\_scmf\_sa\_2)))) \Rightarrow ((v2\_scm\_halt (k1\_scmf\_sa\_8b X4 X2 X3)) \wedge (((k1\_funct\_1 \\
& X1 X4 = k6\_numbers) \Rightarrow (r8\_pboole (u1\_struct\_0 k1\_scmf\_sa\_2) (k1\_scmf\_sa\_6b \\
& (k1\_scmf\_sa\_8b X4 X2 X3) X1 X0) (k1\_funct\_4 (k1\_scmf\_sa\_6b X2 X1 X0) ( \\
& k7\_memstr\_0 np\_3 k1\_scmf\_sa\_2 (k2\_nat\_1 (k2\_nat\_1 (k5\_card\_1 \\
& X2) (k5\_card\_1 X3)) np\_3)))))) \wedge ((k1\_funct\_1 X1 X4 \neq k6\_numbers) \Rightarrow \\
& (r8\_pboole (u1\_struct\_0 k1\_scmf\_sa\_2) (k1\_scmf\_sa\_6b (k1\_scmf\_sa\_8b \\
& X4 X2 X3) X1 X0) (k1\_funct\_4 (k1\_scmf\_sa\_6b X3 X1 X0) (k7\_memstr\_0 np\_3 \\
& k1\_scmf\_sa\_2 (k2\_nat\_1 (k2\_nat\_1 (k5\_card\_1 X2) (k5\_card\_1 X3)) \\
& np\_3)))))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 (u1\_struct\_0 k1\_scmf\_sa\_2)) \wedge \\
& ((v1\_funct\_1 X0) \wedge ((v5\_funct\_1 X0 (k2\_memstr\_0 np\_3 k1\_scmf\_sa\_2)) \wedge \\
& (v1\_partfun1 X0 (u1\_struct\_0 k1\_scmf\_sa\_2)))))) \Rightarrow (\forall X1. \\
& ((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 k5\_numbers) \wedge ((v5\_relat\_1 X1 \\
& (u1\_compos\_1 k1\_scmf\_sa\_2)) \wedge ((v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 \\
& k5\_numbers)))) \Rightarrow (\forall X2.((v1\_ami\_2 X2) \wedge ((\neg v1\_scmf\_sa\_m \\
& X2) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 k1\_scmf\_sa\_2)))) \Rightarrow ((r1\_xreal\_0 \\
& k6\_numbers (k1\_funct\_1 X0 X2)) \Rightarrow (k1\_funct\_1 (k1\_scmf\_sa\_6b (k4\_sfmastr2 \\
& X2) X0 X1) X2 = k6\_numbers)))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0) \wedge ((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 \\
& X0 k5\_numbers) \wedge ((v5\_relat\_1 X0 (u1\_compos\_1 k1\_scmfsa\_2)) \wedge \\
& (v1\_funct\_1 X0) \wedge ((v1\_finset\_1 X0) \wedge (v1\_afinsq\_1 X0)))))) \Rightarrow ( \\
& (v2\_scm\_halt X0) \Leftrightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\
& X1 (u1\_struct\_0 k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& X1 (k2\_memstr\_0 np\_3 k1\_scmfsa\_2)) \wedge (v1\_partfun1 X1 (u1\_struct\_0 \\
& k1\_scmfsa\_2)))))) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 \\
& X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 k1\_scmfsa\_2)) \wedge \\
& (v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 k5\_numbers)))))) \Rightarrow (r2\_scm\_halt \\
& X0 X1 X2)))
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 (u1\_struct\_0 k1\_scmfsa\_2)) \wedge \\
& ((v1\_funct\_1 X0) \wedge ((v5\_funct\_1 X0 (k2\_memstr\_0 np\_3 k1\_scmfsa\_2)) \wedge \\
& (v1\_partfun1 X0 (u1\_struct\_0 k1\_scmfsa\_2)))))) \Rightarrow (\forall X1. \\
& ((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 k5\_numbers) \wedge ((v5\_relat\_1 X1 \\
& (u1\_compos\_1 k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 \\
& k5\_numbers)))))) \Rightarrow (\forall X2.((v1\_ami\_2 X2) \wedge ((\neg v1\_scmfsa\_m \\
& X2) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 k1\_scmfsa\_2)))))) \Rightarrow ((r1\_xreal\_0 \\
& (k1\_funct\_1 X0 X2) k6\_numbers) \Rightarrow (k1\_funct\_1 (k1\_scmfsa6b (k4\_sfmastr2 \\
& X2) X0 X1) X2 = k1\_funct\_1 X0 X2)))
\end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0) \wedge ((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 \\
& X0 k5\_numbers) \wedge ((v5\_relat\_1 X0 (u1\_compos\_1 k1\_scmfsa\_2)) \wedge \\
& (v1\_funct\_1 X0) \wedge ((v1\_finset\_1 X0) \wedge (v1\_afinsq\_1 X0)))))) \Rightarrow ( \\
& (v1\_scm\_halt X0) \Leftrightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\
& X1 (u1\_struct\_0 k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& X1 (k2\_memstr\_0 np\_3 k1\_scmfsa\_2)) \wedge (v1\_partfun1 X1 (u1\_struct\_0 \\
& k1\_scmfsa\_2)))))) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 \\
& X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 k1\_scmfsa\_2)) \wedge \\
& (v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 k5\_numbers)))))) \Rightarrow (r1\_scm\_halt \\
& X0 X1 X2)))
\end{aligned} \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.(((v1\_ami\_2 X0)\wedge(m1\_subset\_1 \\
& X0 (u1\_struct\_0 k1\_scmfsa\_2)))\wedge(((\neg v1\_xboole\_0 X1)\wedge((v1\_relat\_1 \\
& X1)\wedge((v4\_relat\_1 X1 k5\_numbers)\wedge((v5\_relat\_1 X1 (u1\_compos\_1 \\
& k1\_scmfsa\_2))\wedge((v1\_funct\_1 X1)\wedge((v1\_finset\_1 X1)\wedge(v1\_afinsq\_1 \\
& X1))))))\wedge((\neg v1\_xboole\_0 X2)\wedge((v1\_relat\_1 X2)\wedge((v4\_relat\_1 \\
& X2 k5\_numbers)\wedge((v5\_relat\_1 X2 (u1\_compos\_1 k1\_scmfsa\_2))\wedge \\
& (v1\_funct\_1 X2)\wedge((v1\_finset\_1 X2)\wedge(v1\_afinsq\_1 X2))))))\Rightarrow \\
& ((\neg v1\_xboole\_0 (k2\_scmfsa8b X0 X1 X2))\wedge((v1\_relat\_1 (k2\_scmfsa8b \\
& X0 X1 X2))\wedge((v4\_relat\_1 (k2\_scmfsa8b X0 X1 X2) k5\_numbers)\wedge((v5\_relat\_1 \\
& (k2\_scmfsa8b X0 X1 X2) (u1\_compos\_1 k1\_scmfsa\_2))\wedge((v1\_funct\_1 \\
& (k2\_scmfsa8b X0 X1 X2))\wedge((v1\_finset\_1 (k2\_scmfsa8b X0 X1 X2))\wedge \\
& (v1\_afinsq\_1 (k2\_scmfsa8b X0 X1 X2)))))))))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(((v1\_ami\_2 X0)\wedge(m1\_subset\_1 X0 (u1\_struct\_0 k1\_scmfsa\_2)))\Rightarrow \\
& (\forall X1.(((\neg v1\_xboole\_0 X1)\wedge((v1\_relat\_1 X1)\wedge((v4\_relat\_1 \\
& X1 k5\_numbers)\wedge((v5\_relat\_1 X1 (u1\_compos\_1 k1\_scmfsa\_2))\wedge \\
& (v1\_funct\_1 X1)\wedge((v1\_finset\_1 X1)\wedge(v1\_afinsq\_1 X1))))))\Rightarrow( \\
& \forall X2.(((\neg v1\_xboole\_0 X2)\wedge((v1\_relat\_1 X2)\wedge((v4\_relat\_1 \\
& X2 k5\_numbers)\wedge((v5\_relat\_1 X2 (u1\_compos\_1 k1\_scmfsa\_2))\wedge \\
& (v1\_funct\_1 X2)\wedge((v1\_finset\_1 X2)\wedge(v1\_afinsq\_1 X2))))))\Rightarrow( \\
& k3\_scmfsa8b X0 X1 X2 = k1\_scmfsa8b X0 X2 (k2\_scmfsa8b X0 X2 X1))))))
\end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(((\neg v1\_xboole\_0 X0)\wedge((v1\_relat\_1 X0)\wedge((v4\_relat\_1 \\
& X0 k5\_numbers)\wedge((v5\_relat\_1 X0 (u1\_compos\_1 k1\_scmfsa\_2))\wedge \\
& (v1\_funct\_1 X0)\wedge((v1\_finset\_1 X0)\wedge((v1\_afinsq\_1 X0)\wedge(v2\_scm\_halt \\
& X0))))))\Rightarrow(((\neg v1\_xboole\_0 X0)\wedge((v1\_relat\_1 X0)\wedge((v4\_relat\_1 \\
& X0 k5\_numbers)\wedge((v5\_relat\_1 X0 (u1\_compos\_1 k1\_scmfsa\_2))\wedge \\
& (v1\_funct\_1 X0)\wedge((v1\_finset\_1 X0)\wedge((v1\_afinsq\_1 X0)\wedge(v1\_scm\_halt \\
& X0)))))))))
\end{aligned} \tag{12}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v5\_relat\_1 \\
& X0 (u1\_compos\_1 k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X0) \wedge (v1\_partfun1 \\
& X0 k5\_numbers)))))) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\
& X1 (u1\_struct\_0 k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& X1 (k2\_memstr\_0 np\_3 k1\_scmfsa\_2)) \wedge (v1\_partfun1 X1 (u1\_struct\_0 \\
& k1\_scmfsa\_2)))))) \Rightarrow (\forall X2.((\neg v1\_xboole\_0 X2) \wedge ((v1\_relat\_1 \\
& X2) \wedge ((v4\_relat\_1 X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 \\
& k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_finset\_1 X2) \wedge ((v1\_afinsq\_1 \\
& X2) \wedge (v2\_scm\_halt X2)))))) \Rightarrow (\forall X3.((\neg v1\_xboole\_0 X3) \wedge \\
& ((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 X3 k5\_numbers) \wedge ((v5\_relat\_1 X3 \\
& (u1\_compos\_1 k1\_scmfsa\_2)) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_finset\_1 \\
& X3) \wedge ((v1\_afinsq\_1 X3) \wedge (v2\_scm\_halt X3)))))) \Rightarrow (\forall X4. \\
& ((v1\_ami\_2 X4) \wedge ((\neg v1\_scmfsa\_m X4) \wedge (m1\_subset\_1 X4 (u1\_struct\_0 \\
& k1\_scmfsa\_2)))) \Rightarrow ((v2\_scm\_halt (k3\_scmfsa8b X4 X2 X3)) \wedge (((\neg r1\_xreal\_0 \\
& k6\_numbers (k1\_funct\_1 X1 X4)) \Rightarrow (r8\_pboole (u1\_struct\_0 k1\_scmfsa\_2) \\
& (k1\_scmfsa6b (k3\_scmfsa8b X4 X2 X3) X1 X0) (k1\_funct\_4 (k1\_scmfsa6b \\
& X2 X1 X0) (k7\_memstr\_0 np\_3 k1\_scmfsa\_2 (k2\_nat\_1 (k2\_nat\_1 (k2\_nat\_1 \\
& (k5\_card\_1 X2) (k5\_card\_1 X3)) (k5\_card\_1 X3)) np\_7)))))) \wedge ((r1\_xreal\_0 \\
& k6\_numbers (k1\_funct\_1 X1 X4)) \Rightarrow (r8\_pboole (u1\_struct\_0 k1\_scmfsa\_2) \\
& (k1\_scmfsa6b (k3\_scmfsa8b X4 X2 X3) X1 X0) (k1\_funct\_4 (k1\_scmfsa6b \\
& X3 X1 X0) (k7\_memstr\_0 np\_3 k1\_scmfsa\_2 (k2\_nat\_1 (k2\_nat\_1 (k2\_nat\_1 \\
& (k5\_card\_1 X2) (k5\_card\_1 X3)) (k5\_card\_1 X3)) np\_7)))))))))
\end{aligned}$$