

## t14\_scmpds\_8

(TMUXC3xcE9GZcN43cRVeAY8FMh2vFjwJdg1)

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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  $k1\_scmpds\_2 : \iota$  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  $np\_2 : \iota$  be given. Let  $v5\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_numbers : \iota$  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  $v2\_compos\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_scmpds\_4 : \iota \Rightarrow o$  be given. Let  $v1\_ami\_2 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_int\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_card\_3 : \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_recdef\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_scmpds\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_scmpds\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_scmpds\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_scmpds\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k8\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_scmpds\_8 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((v1\_ami\_2 X0) \wedge (m1\_subset\_1 X0 (u1\_struct\_0 k1\_scmpds\_2))) \Rightarrow \\
 & (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 (u1\_struct\_0 k1\_scmpds\_2)) \wedge \\
 & ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 X1 (k2\_memstr\_0 np\_2 k1\_scmpds\_2)) \wedge \\
 & (v1\_partfun1 X1 (u1\_struct\_0 k1\_scmpds\_2)))))) \Rightarrow (k1\_funct\_1 \\
 & (k8\_memstr\_0 np\_2 k1\_scmpds\_2 X1) X0 = k1\_funct\_1 X1 X0))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0 : \iota \Rightarrow o. \forall X1. \forall X2. \forall X3. \forall X4. \\
& \forall X5. \forall X6 : \iota \Rightarrow \iota. ((\forall X7. m2\_subset\_1 (X6 X7) \\
& k1\_numbers k5\_numbers) \wedge (((v1\_relat\_1 X5) \wedge ((v4\_relat\_1 X5 (u1\_struct\_0 \\
& k1\_scmpds\_2)) \wedge (v1\_funct\_1 X5) \wedge ((v5\_funct\_1 X5 (k2\_memstr\_0 \\
& np\_2 k1\_scmpds\_2)) \wedge (v1\_partfun1 X5 (u1\_struct\_0 k1\_scmpds\_2)) \wedge \\
& (v5\_memstr\_0 X5 np\_2 k1\_scmpds\_2 k6\_numbers)))))) \wedge (((v1\_relat\_1 \\
& X4) \wedge ((v4\_relat\_1 X4 k5\_numbers) \wedge ((v5\_relat\_1 X4 (u1\_compos\_1 \\
& k1\_scmpds\_2)) \wedge (v1\_funct\_1 X4) \wedge (v1\_partfun1 X4 k5\_numbers)))))) \wedge \\
& (((\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\_scmpds\_2)) \wedge (v1\_funct\_1 X3) \wedge \\
& ((v1\_finset\_1 X3) \wedge (v1\_afinsq\_1 X3) \wedge ((v2\_compos\_1 X3 k1\_scmpds\_2) \wedge \\
& (v3\_scmpds\_4 X3)))))))))) \wedge (((v1\_ami\_2 X2) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 \\
& k1\_scmpds\_2)) \wedge (v1\_int\_1 X1)))))) \Rightarrow (((\neg r1\_xxreal\_0 k6\_numbers \\
& (k1\_funct\_1 X5 (k2\_scmpds\_2 (k1\_funct\_1 X5 X2) X1))) \wedge ((\forall X7. \\
& ((v1\_relat\_1 X7) \wedge ((v4\_relat\_1 X7 (u1\_struct\_0 k1\_scmpds\_2)) \wedge \\
& ((v1\_funct\_1 X7) \wedge ((v5\_funct\_1 X7 (k2\_memstr\_0 np\_2 k1\_scmpds\_2)) \wedge \\
& ((v1\_partfun1 X7 (u1\_struct\_0 k1\_scmpds\_2)) \wedge (v5\_memstr\_0 X7 \\
& np\_2 k1\_scmpds\_2 k6\_numbers)))))) \Rightarrow (((X0 X7) \wedge (X6 X7 = k6\_numbers)) \Rightarrow \\
& (r1\_xxreal\_0 k6\_numbers (k1\_funct\_1 X7 (k2\_scmpds\_2 (k1\_funct\_1 \\
& X5 X2) X1)))) \wedge ((X0 X5) \wedge (\forall X7. ((v1\_relat\_1 X7) \wedge ((v4\_relat\_1 \\
& X7 (u1\_struct\_0 k1\_scmpds\_2)) \wedge (v1\_funct\_1 X7) \wedge ((v5\_funct\_1 \\
& X7 (k2\_memstr\_0 np\_2 k1\_scmpds\_2)) \wedge (v1\_partfun1 X7 (u1\_struct\_0 \\
& k1\_scmpds\_2)) \wedge (v5\_memstr\_0 X7 np\_2 k1\_scmpds\_2 k6\_numbers)))))) \Rightarrow \\
& (\forall X8. ((v1\_relat\_1 X8) \wedge ((v4\_relat\_1 X8 k5\_numbers) \wedge (( \\
& v5\_relat\_1 X8 (u1\_compos\_1 k1\_scmpds\_2)) \wedge (v1\_funct\_1 X8) \wedge ( \\
& v1\_partfun1 X8 k5\_numbers)))))) \Rightarrow (((X0 X7) \wedge (k1\_funct\_1 X7 X2 = k1\_funct\_1 \\
& X5 X2)) \Rightarrow ((r1\_xxreal\_0 k6\_numbers (k1\_funct\_1 X7 (k2\_scmpds\_2 \\
& (k1\_funct\_1 X5 X2) X1))) \vee ((k1\_funct\_1 (k6\_scmpds\_4 X3 X7 X8) X2 = \\
& k1\_funct\_1 X7 X2) \wedge (r1\_scmpds\_6 X3 X7 X8) \wedge (r2\_scmpds\_6 X3 X7 X8) \wedge \\
& ((\neg r1\_xxreal\_0 (X6 X7) (X6 (k8\_memstr\_0 np\_2 k1\_scmpds\_2 (k6\_scmpds\_4 \\
& X3 X7 X8)))) \wedge (X0 (k8\_memstr\_0 np\_2 k1\_scmpds\_2 (k6\_scmpds\_4 X3 \\
& X7 X8)))))))))) \Rightarrow (k6\_scmpds\_4 (k1\_scmpds\_8 X2 X1 X3) X5 X4 = \\
& k6\_scmpds\_4 (k1\_scmpds\_8 X2 X1 X3) (k8\_memstr\_0 np\_2 k1\_scmpds\_2 \\
& (k6\_scmpds\_4 X3 X5 X4)) X4))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((\neg v1\_xboole\_0 X0) \wedge (v1\_relat\_1 \\
& X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v5\_relat\_1 X0 (u1\_compos\_1 \\
& k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X0) \wedge ((v1\_finset\_1 X0) \wedge (v1\_afinsq\_1 \\
& X0)))))) \wedge (((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 (u1\_struct\_0 k1\_scmpds\_2)) \wedge \\
& ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 X1 (k2\_memstr\_0 np\_2 k1\_scmpds\_2)) \wedge \\
& (v1\_partfun1 X1 (u1\_struct\_0 k1\_scmpds\_2)))))) \wedge ((v1\_relat\_1 \\
& X2) \wedge ((v4\_relat\_1 X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 \\
& k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 k5\_numbers)))))) \Rightarrow \\
& ((v1\_relat\_1 (k6\_scmpds\_4 X0 X1 X2)) \wedge ((v4\_relat\_1 (k6\_scmpds\_4 \\
& X0 X1 X2) (u1\_struct\_0 k1\_scmpds\_2)) \wedge ((v1\_funct\_1 (k6\_scmpds\_4 \\
& X0 X1 X2)) \wedge ((v5\_funct\_1 (k6\_scmpds\_4 X0 X1 X2) (k2\_memstr\_0 np\_2 \\
& k1\_scmpds\_2)) \wedge (v1\_partfun1 (k6\_scmpds\_4 X0 X1 X2) (u1\_struct\_0 \\
& k1\_scmpds\_2))))))
\end{aligned} \tag{3}$$

**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\_scmpds\_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\_scmpds\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& X1 (k2\_memstr\_0 np\_2 k1\_scmpds\_2)) \wedge ((v1\_partfun1 X1 (u1\_struct\_0 \\
& k1\_scmpds\_2)) \wedge (v5\_memstr\_0 X1 np\_2 k1\_scmpds\_2 k6\_numbers)))))) \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\_scmpds\_2)) \wedge ( \\
& (v1\_funct\_1 X2) \wedge ((v1\_finset\_1 X2) \wedge ((v1\_afinsq\_1 X2) \wedge ((v2\_compos\_1 \\
& X2 k1\_scmpds\_2) \wedge (v3\_scmpds\_4 X2)))))))))) \Rightarrow (\forall X3.((v1\_ami\_2 \\
& X3) \wedge (m1\_subset\_1 X3 (u1\_struct\_0 k1\_scmpds\_2))) \Rightarrow (\forall X4. \\
& (v1\_int\_1 X4) \Rightarrow (\forall X5. \forall X6. ((v1\_funct\_1 X6) \wedge ((v1\_funct\_2 \\
& X6 (k4\_card\_3 (k2\_memstr\_0 np\_2 k1\_scmpds\_2)) k5\_numbers) \wedge ( \\
& m1\_subset\_1 X6 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k4\_card\_3 (k2\_memstr\_0 \\
& np\_2 k1\_scmpds\_2)) k5\_numbers)))))) \Rightarrow ((\forall X7.((v1\_relat\_1 \\
& X7) \wedge ((v4\_relat\_1 X7 (u1\_struct\_0 k1\_scmpds\_2)) \wedge ((v1\_funct\_1 \\
& X7) \wedge ((v5\_funct\_1 X7 (k2\_memstr\_0 np\_2 k1\_scmpds\_2)) \wedge ((v1\_partfun1 \\
& X7 (u1\_struct\_0 k1\_scmpds\_2)) \wedge (v5\_memstr\_0 X7 np\_2 k1\_scmpds\_2 \\
& k6\_numbers)))))) \Rightarrow ((k1\_recdef\_1 X6 X7 = k6\_numbers) \Rightarrow (r1\_xxreal\_0 \\
& k6\_numbers (k1\_funct\_1 X7 (k2\_scmpds\_2 (k1\_funct\_1 X1 X3) X4)))) \wedge \\
& (\forall X7.((v1\_relat\_1 X7) \wedge ((v4\_relat\_1 X7 (u1\_struct\_0 k1\_scmpds\_2)) \wedge \\
& ((v1\_funct\_1 X7) \wedge ((v5\_funct\_1 X7 (k2\_memstr\_0 np\_2 k1\_scmpds\_2)) \wedge \\
& ((v1\_partfun1 X7 (u1\_struct\_0 k1\_scmpds\_2)) \wedge (v5\_memstr\_0 X7 \\
& np\_2 k1\_scmpds\_2 k6\_numbers)))))) \Rightarrow (\forall X8.((v1\_relat\_1 \\
& X8) \wedge ((v4\_relat\_1 X8 k5\_numbers) \wedge ((v5\_relat\_1 X8 (u1\_compos\_1 \\
& k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X8) \wedge (v1\_partfun1 X8 k5\_numbers)))))) \Rightarrow \\
& (((\forall X9.((v1\_ami\_2 X9) \wedge (m1\_subset\_1 X9 (u1\_struct\_0 k1\_scmpds\_2))) \Rightarrow \\
& ((X9 \in X5) \Rightarrow (k1\_funct\_1 X7 X9 = k1\_funct\_1 X1 X9))) \wedge (k1\_funct\_1 X7 \\
& X3 = k1\_funct\_1 X1 X3)) \Rightarrow ((r1\_xxreal\_0 k6\_numbers (k1\_funct\_1 X7 \\
& (k2\_scmpds\_2 (k1\_funct\_1 X1 X3) X4))) \vee ((k1\_funct\_1 (k6\_scmpds\_4 \\
& X2 X7 X8) X3 = k1\_funct\_1 X7 X3) \wedge ((r1\_scmpds\_6 X2 X7 X8) \wedge ((r2\_scmpds\_6 \\
& X2 X7 X8) \wedge ((\neg r1\_xxreal\_0 (k1\_recdef\_1 X6 X7) (k1\_recdef\_1 X6 (k8\_memstr\_0 \\
& np\_2 k1\_scmpds\_2 (k6\_scmpds\_4 X2 X7 X8)))))) \wedge (\forall X9.((v1\_ami\_2 \\
& X9) \wedge (m1\_subset\_1 X9 (u1\_struct\_0 k1\_scmpds\_2))) \Rightarrow ((X9 \in X5) \Rightarrow ( \\
& k1\_funct\_1 (k6\_scmpds\_4 X2 X7 X8) X9 = k1\_funct\_1 X7 X9)))))) \Rightarrow \\
& ((r1\_xxreal\_0 k6\_numbers (k1\_funct\_1 X1 (k2\_scmpds\_2 (k1\_funct\_1 \\
& X1 X3) X4))) \vee (k6\_scmpds\_4 (k1\_scmpds\_8 X3 X4 X2) X1 X0 = k6\_scmpds\_4 \\
& (k1\_scmpds\_8 X3 X4 X2) (k8\_memstr\_0 np\_2 k1\_scmpds\_2 (k6\_scmpds\_4 \\
& X2 X1 X0)) X0))))))
\end{aligned}$$