

t15\_prelamb  
(TMLK4g1uWFKfLQQhAB4hM7dcLPf56q5N3QZ)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v10\_prelamb : \iota \Rightarrow o$  be given. Let  $l2\_prelamb : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $r2\_prelamb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k12\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_prelamb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finseq\_1 : \iota \Rightarrow o$  be given. Let  $k7\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_prelamb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m2\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k5\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_prelamb : \iota \Rightarrow o$  be given. Let  $k3\_prelamb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_finseq\_1 X0))) \Rightarrow \\ & \quad (\forall X1.((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 \\ & \quad X1)))) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge ((v1\_funct\_1 X2) \wedge (v1\_finseq\_1 \\ & \quad X2)))) \Rightarrow (k7\_finseq\_1 (k7\_finseq\_1 X0 X1) X2 = k7\_finseq\_1 X0 (k7\_finseq\_1 \\ & \quad X1 X2)))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_prelamb X0) \wedge (l2\_prelamb \\ & \quad X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & \quad (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow ((r2\_prelamb X0 (k8\_finseq\_1 \\ & \quad (u1\_struct\_0 X0) (k12\_finseq\_1 (u1\_struct\_0 X0) (k2\_prelamb X0 \\ & \quad X1 X2)) (k12\_finseq\_1 (u1\_struct\_0 X0) X2)) X1) \wedge (r2\_prelamb X0 \\ & \quad (k8\_finseq\_1 (u1\_struct\_0 X0) (k12\_finseq\_1 (u1\_struct\_0 X0) \\ & \quad X2) (k12\_finseq\_1 (u1\_struct\_0 X0) (k1\_prelamb X0 X2 X1))) X1)))) \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0. \forall X1. (m2\_finseq\_1 X1 X0) \Leftrightarrow (m1\_finseq\_1 X1 X0) \tag{3}$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((m1\_finseq\_1 X1 X0) \wedge (m1\_finseq\_1 X2 X0)) \Rightarrow (k8\_finseq\_1 X0 X1 X2 = k7\_finseq\_1 X1 X2) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge(m1\_subset\_1 X1 X0))\Rightarrow (k12\_finseq\_1 X0 X1 = k5\_finseq\_1 X1) \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0)\wedge((v10\_prelamb X0)\wedge(l2\_prelamb \\ X0)))\Rightarrow(\forall X1.(m2\_finseq\_1 X1 (u1\_struct\_0 X0))\Rightarrow(\forall X2. \\ (m2\_finseq\_1 X2 (u1\_struct\_0 X0))\Rightarrow(\forall X3.(m1\_subset\_1 X3 \\ (u1\_struct\_0 X0))\Rightarrow(\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0))\Rightarrow \\ (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 X0))\Rightarrow(((r2\_prelamb \\ X0 X1 X3)\wedge(r2\_prelamb X0 (k8\_finseq\_1 (u1\_struct\_0 X0) (k12\_finseq\_1 \\ (u1\_struct\_0 X0) X4) X2) X5))\Rightarrow(r2\_prelamb X0 (k8\_finseq\_1 (u1\_struct\_0 \\ X0) (k8\_finseq\_1 (u1\_struct\_0 X0) X1 (k12\_finseq\_1 (u1\_struct\_0 \\ X0) (k1\_prelamb X0 X3 X4))) X2) X5)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.v1\_finseq\_1 (k5\_finseq\_1 X0) \quad (7)$$

Assume the following.

$$\forall X0.(v1\_relat\_1 (k5\_finseq\_1 X0))\wedge(v1\_funct\_1 (k5\_finseq\_1 X0)) \quad (8)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge(l1\_struct\_0 X0))\Rightarrow(\neg v1\_xboole\_0 (u1\_struct\_0 X0)) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_finseq\_1 X1 X0)\Rightarrow((v1\_relat\_1 X1)\wedge(v1\_funct\_1 X1)\wedge(v1\_finseq\_1 X1)) \quad (10)$$

Assume the following.

$$\forall X0.(l2\_prelamb X0)\Rightarrow(l1\_prelamb X0) \quad (11)$$

Assume the following.

$$\forall X0.(l1\_prelamb X0)\Rightarrow(l1\_struct\_0 X0) \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1\_finseq\_1 X1 X0)\wedge(m1\_finseq\_1 X2 X0))\Rightarrow(m2\_finseq\_1 (k8\_finseq\_1 X0 X1 X2) X0) \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge(l1\_prelamb X0))\wedge((m1\_subset\_1 X1 (u1\_struct\_0 X0))\wedge(m1\_subset\_1 X2 (u1\_struct\_0 X0))))\Rightarrow(m1\_subset\_1 (k1\_prelamb X0 X1 X2) (u1\_struct\_0 X0)) \quad (14)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge(m1\_subset\_1 X1 X0))\Rightarrow(m2\_finseq\_1 (k12\_finseq\_1 X0 X1) X0) \quad (15)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l2\_prelamb X0)) \Rightarrow ((v10\_prelamb \\
& X0) \Leftrightarrow ((\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (r2\_prelamb \\
& X0 (k12\_finseq\_1 (u1\_struct\_0 X0) X1) X1)) \wedge ((\forall X1.(m2\_finseq\_1 \\
& X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow ((r2\_prelamb \\
& X0 (k8\_finseq\_1 (u1\_struct\_0 X0) X1 (k12\_finseq\_1 (u1\_struct\_0 \\
& X0) X3)) X2) \Rightarrow (r2\_prelamb X0 X1 (k2\_prelamb X0 X2 X3)))))) \wedge ((\forall X1. \\
& (m2\_finseq\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 \\
& (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow \\
& ((r2\_prelamb X0 (k8\_finseq\_1 (u1\_struct\_0 X0) (k12\_finseq\_1 ( \\
& u1\_struct\_0 X0) X3) X1) X2) \Rightarrow (r2\_prelamb X0 X1 (k1\_prelamb X0 X3 X2)))))) \wedge \\
& ((\forall X1.(m2\_finseq\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.( \\
& m2\_finseq\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m2\_finseq\_1 X3 \\
& (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow \\
& (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 X0)) \Rightarrow (\forall X6.(m1\_subset\_1 \\
& X6 (u1\_struct\_0 X0)) \Rightarrow (((r2\_prelamb X0 X1 X5) \wedge (r2\_prelamb X0 (k8\_finseq\_1 \\
& (u1\_struct\_0 X0) (k8\_finseq\_1 (u1\_struct\_0 X0) X2 (k12\_finseq\_1 \\
& (u1\_struct\_0 X0) X4)) X3) X6)) \Rightarrow (r2\_prelamb X0 (k8\_finseq\_1 (u1\_struct\_0 \\
& X0) (k8\_finseq\_1 (u1\_struct\_0 X0) (k8\_finseq\_1 (u1\_struct\_0 X0) \\
& X2 (k12\_finseq\_1 (u1\_struct\_0 X0) (k2\_prelamb X0 X4 X5))) X1) X3) \\
& X6)))))) \wedge ((\forall X1.(m2\_finseq\_1 X1 (u1\_struct\_0 X0)) \Rightarrow ( \\
& \forall X2.(m2\_finseq\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m2\_finseq\_1 \\
& X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 X0)) \Rightarrow (\forall X6. \\
& (m1\_subset\_1 X6 (u1\_struct\_0 X0)) \Rightarrow (((r2\_prelamb X0 X1 X5) \wedge (r2\_prelamb \\
& X0 (k8\_finseq\_1 (u1\_struct\_0 X0) (k8\_finseq\_1 (u1\_struct\_0 X0) \\
& X2 (k12\_finseq\_1 (u1\_struct\_0 X0) X4)) X3) X6)) \Rightarrow (r2\_prelamb X0 \\
& (k8\_finseq\_1 (u1\_struct\_0 X0) (k8\_finseq\_1 (u1\_struct\_0 X0) ( \\
& k8\_finseq\_1 (u1\_struct\_0 X0) X2 X1) (k12\_finseq\_1 (u1\_struct\_0 \\
& X0) (k1\_prelamb X0 X5 X4))) X3) X6)))))) \wedge ((\forall X1.(m2\_finseq\_1 \\
& X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m2\_finseq\_1 X2 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4. \\
& (m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow (\forall X5.(m1\_subset\_1 X5 \\
& (u1\_struct\_0 X0)) \Rightarrow ((r2\_prelamb X0 (k8\_finseq\_1 (u1\_struct\_0 \\
& X0) (k8\_finseq\_1 (u1\_struct\_0 X0) (k8\_finseq\_1 (u1\_struct\_0 X0) \\
& X1 (k12\_finseq\_1 (u1\_struct\_0 X0) X3)) (k12\_finseq\_1 (u1\_struct\_0 \\
& X0) X4)) X2) X5) \Rightarrow (r2\_prelamb X0 (k8\_finseq\_1 (u1\_struct\_0 X0) ( \\
& k8\_finseq\_1 (u1\_struct\_0 X0) X1 (k12\_finseq\_1 (u1\_struct\_0 X0) \\
& (k3\_prelamb X0 X3 X4))) X2) X5)))))) \wedge ((\forall X1.(m2\_finseq\_1 \\
& X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m2\_finseq\_1 X2 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4. \\
& (m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow (((r2\_prelamb X0 X1 X3) \wedge (r2\_prelamb \\
& X0 X2 X4)) \Rightarrow (r2\_prelamb X0 (k8\_finseq\_1 (u1\_struct\_0 X0) X1 X2) ( \\
& k3\_prelamb X0 X3 X4)))))))))
\end{aligned} \tag{16}$$

**Theorem 1**

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_prelamb X0) \wedge (l2\_prelamb \\ X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ (u1\_struct\_0 X0)) \Rightarrow (r2\_prelamb X0 (k12\_finseq\_1 (u1\_struct\_0 \\ X0) (k1\_prelamb X0 X1 X2)) (k1\_prelamb X0 (k1\_prelamb X0 X3 X1) (k1\_prelamb \\ X0 X3 X2))))))) \end{aligned}$$