

## t14\_lattice6

(TMcauhrk9C7dLpq7nezj3qKEqyfQjnrVB2n)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v10\_lattices : \iota \Rightarrow o$  be given. Let  $v4\_lattice3 : \iota \Rightarrow o$  be given. Let  $v1\_lattice6 : \iota \Rightarrow o$  be given. Let  $l3\_lattices : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v3\_lattice6 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_lattice6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r3\_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k16\_lattice3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r3\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_lattice6 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v6\_lattices : \iota \Rightarrow o$  be given. Let  $v8\_lattices : \iota \Rightarrow o$  be given. Let  $v9\_lattices : \iota \Rightarrow o$  be given. Let  $r1\_lattices : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_lattices : \iota \Rightarrow o$  be given. Let  $v5\_lattices : \iota \Rightarrow o$  be given. Let  $v7\_lattices : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge ((v4\_lattice3 \\ & X0) \wedge (l3\_lattices X0)))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0)) \Rightarrow (\forall X2.((X1 \in X2) \wedge (r3\_lattice3 X0 X1 X2)) \Rightarrow (k16\_lattice3 \\ & X0 X2 = X1))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge ((v1\_lattice6 \\ & X0) \wedge (l3\_lattices X0)))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\neg (r3\_lattices \\ & X0 X1 X2) \wedge ((X1 \neq X2) \wedge (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow \\ & (\neg (r3\_lattices X0 X3 X2) \wedge (r1\_lattice6 X0 X3 X1))))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge ((v4\_lattice3 \\ & X0) \wedge (l3\_lattices X0)))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0)) \Rightarrow ((v3\_lattice6 X1 X0) \Rightarrow ((r1\_lattice6 X0 (k3\_lattice6 X0 X1 \\ & X1) \wedge (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow ((r1\_lattice6 \\ & X0 X2 X1) \Rightarrow (X2 = k3\_lattice6 X0 X1))))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge((v6\_lattices \\ & X0)\wedge((v8\_lattices X0)\wedge((v9\_lattices X0)\wedge(l3\_lattices X0))))\wedge \\ & ((m1\_subset\_1 X1 (u1\_struct\_0 X0))\wedge(m1\_subset\_1 X2 (u1\_struct\_0 \\ & X0))))\Rightarrow((r3\_lattices X0 X1 X2)\Leftrightarrow(r1\_lattices X0 X1 X2)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge \\ & ((v4\_lattice3 X0)\wedge(l3\_lattices X0))))\wedge(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0)))\Rightarrow(m1\_subset\_1 (k3\_lattice6 X0 X1) (u1\_struct\_0 X0)) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge((v4\_lattice3 \\ & X0)\wedge(l3\_lattices X0))))\Rightarrow(\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0))\Rightarrow((v3\_lattice6 X1 X0)\Leftrightarrow(k3\_lattice6 X0 X1\neq X1))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge((v4\_lattice3 \\ & X0)\wedge(l3\_lattices X0))))\Rightarrow(\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0))\Rightarrow(k3\_lattice6 X0 X1 = k16\_lattice3 X0 (ReplSep (toset (\lambda X2 : \\ & \iota.m1\_subset\_1 X2 (u1\_struct\_0 X0))) (\lambda X2 : \iota.(r3\_lattices \\ & X0 X1 X2)\wedge(X2\neq X1)) (\lambda X2 : \iota.X2)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge((v10\_lattices X0)\wedge(l3\_lattices \\ & X0)))\Rightarrow(\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0))\Rightarrow(\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0))\Rightarrow((r1\_lattice6 X0 X1 X2)\Leftrightarrow((X1\neq \\ & X2)\wedge((r3\_lattices X0 X2 X1)\wedge(\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\ & X0))\Rightarrow(\neg(r3\_lattices X0 X2 X3)\wedge((r3\_lattices X0 X3 X1)\wedge((X3\neq X1)\wedge \\ & (X3\neq X2)))))))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge(l3\_lattices X0))\Rightarrow(\forall X1. \\ & (m1\_subset\_1 X1 (u1\_struct\_0 X0))\Rightarrow(\forall X2.(r3\_lattice3 X0 \\ & X1 X2)\Leftrightarrow(\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0))\Rightarrow((X3 \in X2)\Rightarrow \\ & (r1\_lattices X0 X1 X3)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l3\_lattices X0)\Rightarrow(((\neg v2\_struct\_0 X0)\wedge(v10\_lattices \\ & X0))\Rightarrow((\neg v2\_struct\_0 X0)\wedge((v4\_lattices X0)\wedge((v5\_lattices X0)\wedge \\ & ((v6\_lattices X0)\wedge((v7\_lattices X0)\wedge((v8\_lattices X0)\wedge(v9\_lattices \\ & X0)))))))))) \end{aligned} \quad (10)$$

**Theorem 1**

$$\begin{aligned} \forall X0. (&(\neg v2\_struct\_0 X0) \wedge ((v10\_lattices X0) \wedge ((v4\_lattice3 \\ &X0) \wedge ((v1\_lattice6 X0) \wedge (l3\_lattices X0)))))) \Rightarrow (\forall X1. (m1\_subset\_1 \\ &X1 (u1\_struct\_0 X0)) \Rightarrow ((v3\_lattice6 X1 X0) \Leftrightarrow (\exists X2. (m1\_subset\_1 \\ &X2 (u1\_struct\_0 X0)) \wedge ((r1\_lattice6 X0 X2 X1) \wedge (\forall X3. (m1\_subset\_1 \\ &X3 (u1\_struct\_0 X0)) \Rightarrow ((r1\_lattice6 X0 X3 X1) \Rightarrow (X3 = X2))))))) \end{aligned}$$