

t22\_osalg\_1 (TMU-  
vwf2jAzvn5VQ7LWYKjMMNDgMMfygkkmS)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v11\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v4\_osalg\_1 : \iota \Rightarrow o$  be given. Let  $v5\_osalg\_1 : \iota \Rightarrow o$  be given. Let  $l3\_osalg\_1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $r6\_osalg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v4\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v5\_orders\_2 : \iota \Rightarrow o$  be given. Let  $l1\_orders\_2 : \iota \Rightarrow o$  be given. Let  $m2\_finseq\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k3\_finseq\_2 : \iota \Rightarrow \iota$  be given. Let  $r2\_osalg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_orders\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r3\_orders\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_osalg\_1 : \iota \Rightarrow o$  be given. Let  $l2\_osalg\_1 : \iota \Rightarrow o$  be given. Let  $l1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $k2\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_osalg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 X0) \wedge ((v4\_orders\_2 \\ X0) \wedge ((v5\_orders\_2 X0) \wedge (l1\_orders\_2 X0)))))) \Rightarrow (\forall X1. (m2\_finseq\_2 \\ X1 (u1\_struct\_0 X0) (k3\_finseq\_2 (u1\_struct\_0 X0))) \Rightarrow (\forall X2. \\ (m2\_finseq\_2 X2 (u1\_struct\_0 X0) (k3\_finseq\_2 (u1\_struct\_0 X0))) \Rightarrow \\ ((r2\_osalg\_1 X0 X1 X2) \wedge (r2\_osalg\_1 X0 X2 X1)) \Rightarrow (X1 = X2)))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0. ((v5\_orders\_2 X0) \wedge (l1\_orders\_2 X0)) \Rightarrow (\forall X1. \\ (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. (m1\_subset\_1 X2 \\ (u1\_struct\_0 X0)) \Rightarrow (((r1\_orders\_2 X0 X1 X2) \wedge (r1\_orders\_2 X0 X2 \\ X1)) \Rightarrow (X1 = X2)))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 \\ X0) \wedge (l1\_orders\_2 X0))) \wedge ((m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge \\ (m1\_subset\_1 X2 (u1\_struct\_0 X0)))) \Rightarrow ((r3\_orders\_2 X0 X1 X2) \Leftrightarrow (r1\_orders\_2 \\ X0 X1 X2)) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0. (l3\_osalg\_1 X0) \Rightarrow ((l1\_osalg\_1 X0) \wedge (l2\_osalg\_1 X0)) \quad (4)$$

Assume the following.

$$\forall X0.(l2\_osalg\_1 X0) \Rightarrow ((l1\_msualg\_1 X0) \wedge (l1\_orders\_2 X0)) \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge \\ (l1\_msualg\_1 X0))) \wedge (m1\_subset\_1 X1 (u4\_struct\_0 X0))) \Rightarrow (m1\_subset\_1 \\ (k2\_msualg\_1 X0 X1) (u1\_struct\_0 X0)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge \\ (l1\_msualg\_1 X0))) \wedge (m1\_subset\_1 X1 (u4\_struct\_0 X0))) \Rightarrow (m2\_finseq\_2 \\ (k1\_msualg\_1 X0 X1) (u1\_struct\_0 X0) (k3\_finseq\_2 (u1\_struct\_0 \\ X0))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_osalg\_1 \\ X0))) \Rightarrow ((v5\_osalg\_1 X0) \Leftrightarrow (\forall X1.(m1\_subset\_1 X1 (u4\_struct\_0 \\ X0))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u4\_struct\_0 X0))) \Rightarrow (((r1\_osalg\_1 \\ X0 X1 X2) \wedge ((k1\_msualg\_1 X0 X1 = k1\_msualg\_1 X0 X2) \wedge (k2\_msualg\_1 \\ X0 X1 = k2\_msualg\_1 X0 X2))) \Rightarrow (X1 = X2)))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v4\_osalg\_1 \\ X0) \wedge ((v5\_osalg\_1 X0) \wedge (l3\_osalg\_1 X0)))))) \Rightarrow (\forall X1.(m1\_subset\_1 \\ X1 (u4\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u4\_struct\_0 \\ X0)) \Rightarrow ((r6\_osalg\_1 X0 X1 X2) \Leftrightarrow ((r1\_osalg\_1 X0 X1 X2) \wedge ((r2\_osalg\_1 \\ X0 (k1\_msualg\_1 X0 X1) (k1\_msualg\_1 X0 X2)) \wedge (r3\_orders\_2 X0 (k2\_msualg\_1 \\ X0 X1) (k2\_msualg\_1 X0 X2)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.(l3\_osalg\_1 X0) \Rightarrow ((v4\_osalg\_1 X0) \Rightarrow ((v3\_orders\_2 X0) \wedge ((v4\_orders\_2 X0) \wedge (v5\_orders\_2 X0)))) \quad (10)$$

**Theorem 1**

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v4\_osalg\_1 \\ X0) \wedge ((v5\_osalg\_1 X0) \wedge (l3\_osalg\_1 X0)))))) \Rightarrow (\forall X1.(m1\_subset\_1 \\ X1 (u4\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u4\_struct\_0 \\ X0)) \Rightarrow (((r6\_osalg\_1 X0 X1 X2) \wedge (r6\_osalg\_1 X0 X2 X1)) \Rightarrow (X1 = X2)))) \end{aligned}$$