

t17\_osalg\_2  
(TMY7uuopMvRk3YmZV8EiLiMiffvFJA8c1fK)

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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  $v12\_osalg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m2\_osalg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_osalg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v11\_osalg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $m3\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l1\_osalg\_1 : \iota \Rightarrow o$  be given. Let  $l2\_osalg\_1 : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (m1\_subset\_1 X0 X1) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v4\_osalg\_1 \\ & X0) \wedge ((v5\_osalg\_1 X0) \wedge (l3\_osalg\_1 X0)))))) \Rightarrow (\forall X1. (l3\_msualg\_1 \\ & X1 X0) \Rightarrow ((v12\_osalg\_1 X1 X0) \Leftrightarrow ((v1\_relat\_1 (u3\_msualg\_1 X0 X1)) \wedge \\ & ((v4\_relat\_1 (u3\_msualg\_1 X0 X1) (u1\_struct\_0 X0)) \wedge ((v1\_funct\_1 \\ & (u3\_msualg\_1 X0 X1)) \wedge ((v1\_partfun1 (u3\_msualg\_1 X0 X1) (u1\_struct\_0 \\ & X0)) \wedge (v11\_osalg\_1 (u3\_msualg\_1 X0 X1) X0))))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_msualg\_1 \\ & X0))) \Rightarrow (\forall X1. (l3\_msualg\_1 X1 X0) \Rightarrow (\forall X2. (m3\_pboole \\ & X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1)) \Rightarrow (u3\_msualg\_1 X0 X1 \in k5\_msualg\_2 \\ & X0 X1 X2))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge (\neg v11\_struct\_0 X0) \wedge \\ & ((v4\_osalg\_1 X0) \wedge (v5\_osalg\_1 X0) \wedge (l3\_osalg\_1 X0)))) \wedge ((v12\_osalg\_1 \\ & X1 X0) \wedge (l3\_msualg\_1 X1 X0)) \Rightarrow (\forall X2. (m2\_osalg\_2 X2 X0 X1) \Rightarrow \\ & (m3\_pboole X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0. (l3\_osalg\_1 X0) \Rightarrow ((l1\_osalg\_1 X0) \wedge (l2\_osalg\_1 X0)) \quad (5)$$

Assume the following.

$$\forall X0. (l1\_osalg\_1 X0) \Rightarrow (l1\_msualg\_1 X0) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (\neg v11\_struct\_0 X0) \wedge ((v4\_osalg\_1 \\ & X0) \wedge (v5\_osalg\_1 X0) \wedge (l3\_osalg\_1 X0))) \Rightarrow (\forall X1. ((v12\_osalg\_1 \\ & X1 X0) \wedge (l3\_msualg\_1 X1 X0)) \Rightarrow (\forall X2. (m2\_osalg\_2 X2 X0 X1) \Rightarrow \\ & (k5\_osalg\_2 X0 X1 X2 = \text{ReplSep} (\text{toset} (\lambda X3 : \iota. m1\_subset\_1 X3 \\ & (k5\_msualg\_2 X0 X1 X2))) (\lambda X3 : \iota. (v1\_relat\_1 X3) \wedge ((v4\_relat\_1 \\ & X3 (u1\_struct\_0 X0) \wedge (v1\_funct\_1 X3) \wedge (v1\_partfun1 X3 (u1\_struct\_0 \\ & X0) \wedge (v11\_osalg\_1 X3 X0)))))) (\lambda X3 : \iota. X3))) \end{aligned} \quad (7)$$

**Theorem 1**

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (\neg v11\_struct\_0 X0) \wedge ((v4\_osalg\_1 \\ & X0) \wedge (v5\_osalg\_1 X0) \wedge (l3\_osalg\_1 X0))) \Rightarrow (\forall X1. ((v12\_osalg\_1 \\ & X1 X0) \wedge (l3\_msualg\_1 X1 X0)) \Rightarrow (\forall X2. (m2\_osalg\_2 X2 X0 X1) \Rightarrow \\ & (u3\_msualg\_1 X0 X1 \in k5\_osalg\_2 X0 X1 X2))) \end{aligned}$$