

# t34\_osalg\_2 (TMQXrU- osWsjgLnKKee9gCWYTDii54WNuckK)

October 27, 2020

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  $v3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  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  $r8\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_osalg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $m1\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $g3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u4\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k12\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m3\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_osalg\_1 : \iota \Rightarrow o$  be given. Let  $l2\_osalg\_1 : \iota \Rightarrow o$  be given. Let  $l1\_orders\_2 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_msualg\_1 \\ & \quad X0))) \Rightarrow (\forall X1.(l3\_msualg\_1 X1 X0) \Rightarrow (\forall X2.(m1\_msualg\_2 \\ & \quad X2 X0 X1) \Rightarrow (\forall X3.(m1\_msualg\_2 X3 X0 X1) \Rightarrow ((r2\_pboole (u1\_struct\_0 \\ & \quad X0) (u3\_msualg\_1 X0 X2) (u3\_msualg\_1 X0 X3)) \Rightarrow (m1\_msualg\_2 X2 X0 \\ & \quad X3)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_msualg\_1 \\ & \quad X0))) \Rightarrow (\forall X1.(l3\_msualg\_1 X1 X0) \Rightarrow (\forall X2.(l3\_msualg\_1 \\ & \quad X2 X0) \Rightarrow (((m1\_msualg\_2 X1 X0 X2) \wedge (m1\_msualg\_2 X2 X0 X1)) \Rightarrow (g3\_msualg\_1 \\ & \quad X0 (u3\_msualg\_1 X0 X1) (u4\_msualg\_1 X0 X1) = g3\_msualg\_1 X0 (u3\_msualg\_1 \\ & \quad X0 X2) (u4\_msualg\_1 X0 X2)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v4\_osalg\_1 \\ & \quad X0) \wedge ((v5\_osalg\_1 X0) \wedge (l3\_osalg\_1 X0)))))) \Rightarrow (\forall X1.((v12\_osalg\_1 \\ & \quad X1 X0) \wedge (l3\_msualg\_1 X1 X0)) \Rightarrow (\forall X2.(m2\_osalg\_2 X2 X0 X1) \Rightarrow \\ & \quad (r2\_pboole (u1\_struct\_0 X0) (u3\_msualg\_1 X0 (k12\_msualg\_2 X0 X1 \\ & \quad X2)) (u3\_msualg\_1 X0 (k10\_osalg\_2 X0 X1 X2)))))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_msualg\_1 \\ X0))) \Rightarrow (\forall X1.(l3\_msualg\_1 X1 X0) \Rightarrow (\forall X2.(m3\_pboole \\ X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1)) \Rightarrow ((r8\_pboole (u1\_struct\_0 \\ X0) X2 (u3\_msualg\_1 X0 X1)) \Rightarrow (k12\_msualg\_2 X0 X1 X2 = g3\_msualg\_1 \\ X0 (u3\_msualg\_1 X0 X1) (u4\_msualg\_1 X0 X1)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge \\ ((v4\_osalg\_1 X0) \wedge ((v5\_osalg\_1 X0) \wedge (l3\_osalg\_1 X0)))))) \wedge ((v12\_osalg\_1 \\ X1 X0) \wedge (l3\_msualg\_1 X1 X0)) \Rightarrow (\forall X2.(m2\_osalg\_2 X2 X0 X1) \Rightarrow \\ (m3\_pboole X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge \\ (l1\_msualg\_1 X0))) \wedge (l3\_msualg\_1 X1 X0)) \Rightarrow (\forall X2.(m1\_msualg\_2 \\ X2 X0 X1) \Rightarrow (l3\_msualg\_1 X2 X0)) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.(l3\_osalg\_1 X0) \Rightarrow ((l1\_osalg\_1 X0) \wedge (l2\_osalg\_1 X0)) \quad (7)$$

Assume the following.

$$\forall X0.(l2\_osalg\_1 X0) \Rightarrow ((l1\_msualg\_1 X0) \wedge (l1\_orders\_2 X0)) \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 \\ X0) \wedge (l1\_msualg\_1 X0))) \wedge ((l3\_msualg\_1 X1 X0) \wedge (m3\_pboole X2 (u1\_struct\_0 \\ X0) (u3\_msualg\_1 X0 X1)))) \Rightarrow ((v3\_msualg\_1 (k12\_msualg\_2 X0 X1 X2) \\ X0) \wedge (m1\_msualg\_2 (k12\_msualg\_2 X0 X1 X2) X0 X1)) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 \\ X0) \wedge ((v4\_osalg\_1 X0) \wedge ((v5\_osalg\_1 X0) \wedge (l3\_osalg\_1 X0)))))) \wedge \\ (((v12\_osalg\_1 X1 X0) \wedge (l3\_msualg\_1 X1 X0)) \wedge (m2\_osalg\_2 X2 X0 X1)) \Rightarrow \\ ((v3\_msualg\_1 (k10\_osalg\_2 X0 X1 X2) X0) \wedge ((v12\_osalg\_1 (k10\_osalg\_2 \\ X0 X1 X2) X0) \wedge (m1\_msualg\_2 (k10\_osalg\_2 X0 X1 X2) X0 X1))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge (l1\_msualg\_1 X0)) \wedge \\ (l3\_msualg\_1 X1 X0)) \Rightarrow ((v3\_msualg\_1 X1 X0) \Rightarrow (X1 = g3\_msualg\_1 X0 \\ (u3\_msualg\_1 X0 X1) (u4\_msualg\_1 X0 X1))) \end{aligned} \quad (11)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (v4\_osalg\_1 \\ & X0) \wedge (v5\_osalg\_1 X0) \wedge (l3\_osalg\_1 X0)))) \Rightarrow (\forall X1.((v3\_msualg\_1 \\ & X1 X0) \wedge (v12\_osalg\_1 X1 X0) \wedge (l3\_msualg\_1 X1 X0))) \Rightarrow (\forall X2. \\ & (m2\_osalg\_2 X2 X0 X1) \Rightarrow ((r8\_pboole (u1\_struct\_0 X0) X2 (u3\_msualg\_1 \\ & X0 X1)) \Rightarrow (k10\_osalg\_2 X0 X1 X2 = X1)))) \end{aligned}$$