

## t39\_osalg\_2

(TMJkhJcL5FhJCLsSvWEcuJecXKpFVq8RVBJ)

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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  $v4\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  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  $m1\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k11\_osalg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  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  $l1\_osalg\_1 : \iota \Rightarrow o$  be given. Let  $l2\_osalg\_1 : \iota \Rightarrow o$  be given. Let  $v3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  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  $k2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_osalg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v4\_osalg\_1 \\ & X0) \wedge ((v5\_osalg\_1 X0) \wedge (l3\_osalg\_1 X0)))))) \Rightarrow (\forall X1.(l3\_msualg\_1 \\ & X1 X0) \Rightarrow ((v12\_osalg\_1 X1 X0) \Leftrightarrow ((v1\_relat\_1 (u3\_msualg\_1 X0 X1)) \wedge \\ & ((v4\_relat\_1 (u3\_msualg\_1 X0 X1) (u1\_struct\_0 X0)) \wedge ((v1\_funct\_1 \\ & (u3\_msualg\_1 X0 X1)) \wedge ((v1\_partfun1 (u3\_msualg\_1 X0 X1) (u1\_struct\_0 \\ & X0)) \wedge (v11\_osalg\_1 (u3\_msualg\_1 X0 X1) X0))))))) \end{aligned} \quad (1)$$

Assume the following.

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

Assume the following.

$$\forall X0.(l3\_osalg\_1 X0) \Rightarrow ((l1\_osalg\_1 X0) \wedge (l2\_osalg\_1 X0)) \quad (3)$$

Assume the following.

$$\forall X0.(l1\_osalg\_1 X0) \Rightarrow (l1\_msualg\_1 X0) \quad (4)$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0 \\
& X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v4\_osalg\_1 X0)\wedge((v5\_osalg\_1 X0)\wedge \\
& (l3\_osalg\_1 X0)))))\wedge(((v4\_msualg\_1 X1 X0)\wedge((v12\_osalg\_1 X1 X0)\wedge \\
& (l3\_msualg\_1 X1 X0)))\wedge(((v12\_osalg\_1 X2 X0)\wedge(m1\_msualg\_2 X2 X0 \\
& X1))\wedge((v12\_osalg\_1 X3 X0)\wedge(m1\_msualg\_2 X3 X0 X1))))\Rightarrow((v3\_msualg\_1 \\
& (k11\_osalg\_2 X0 X1 X2 X3) X0)\wedge((v12\_osalg\_1 (k11\_osalg\_2 X0 X1 X2 \\
& X3) X0)\wedge(m1\_msualg\_2 (k11\_osalg\_2 X0 X1 X2 X3) X0 X1)))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v4\_osalg\_1 \\
& X0)\wedge((v5\_osalg\_1 X0)\wedge(l3\_osalg\_1 X0))))\Rightarrow(\forall X1.((v4\_msualg\_1 \\
& X1 X0)\wedge((v12\_osalg\_1 X1 X0)\wedge(l3\_msualg\_1 X1 X0)))\Rightarrow(\forall X2. \\
& ((v12\_osalg\_1 X2 X0)\wedge(m1\_msualg\_2 X2 X0 X1))\Rightarrow(\forall X3.((v12\_osalg\_1 \\
& X3 X0)\wedge(m1\_msualg\_2 X3 X0 X1))\Rightarrow(\forall X4.((v3\_msualg\_1 X4 X0)\wedge \\
& ((v12\_osalg\_1 X4 X0)\wedge(m1\_msualg\_2 X4 X0 X1))\Rightarrow((X4 = k11\_osalg\_2 \\
& X0 X1 X2 X3)\Leftrightarrow(\forall X5.(m2\_osalg\_2 X5 X0 X1)\Rightarrow((r8\_pboole (u1\_struct\_0 \\
& X0) X5 (k2\_pboole (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X2) (u3\_msualg\_1 \\
& X0 X3))\Rightarrow(X4 = k10\_osalg\_2 X0 X1 X5))))))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.(((v1\_relat\_1 X1)\wedge((v4\_relat\_1 \\
& X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\wedge((v1\_relat\_1 \\
& X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge(v1\_partfun1 X2 X0))))\Rightarrow \\
& (k2\_pboole X0 X1 X2 = k2\_pboole X0 X2 X1)
\end{aligned} \tag{7}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v4\_osalg\_1 \\
& X0)\wedge((v5\_osalg\_1 X0)\wedge(l3\_osalg\_1 X0))))\Rightarrow(\forall X1.((v4\_msualg\_1 \\
& X1 X0)\wedge((v12\_osalg\_1 X1 X0)\wedge(l3\_msualg\_1 X1 X0)))\Rightarrow(\forall X2. \\
& ((v12\_osalg\_1 X2 X0)\wedge(m1\_msualg\_2 X2 X0 X1))\Rightarrow(\forall X3.((v12\_osalg\_1 \\
& X3 X0)\wedge(m1\_msualg\_2 X3 X0 X1))\Rightarrow(k11\_osalg\_2 X0 X1 X2 X3 = k11\_osalg\_2 \\
& X0 X1 X3 X2)))
\end{aligned}$$