

t52\_msualg\_6  
(TMcxsx1TzYdX8pyBQ89eHb3YRvniNpZi33S)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v11\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $v4\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_msualg\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_msualg\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_msualg\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_msualg\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_msualg\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_msualg\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_msualg\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_msualg\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_msualg\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_msualg\_1 \\
& X0))) \Rightarrow (\forall X1.((v4\_msualg\_1 X1 X0) \wedge (l3\_msualg\_1 X1 X0)) \Rightarrow \\
& (\forall X2.(m1\_msualg\_4 X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) \\
& (u3\_msualg\_1 X0 X1)) \Rightarrow (\forall X3.((v2\_msualg\_4 X3 X0 X1) \wedge (m1\_msualg\_4 \\
& X3 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 X0 X1))) \Rightarrow ( \\
& (r2\_pboole (u1\_struct\_0 X0) X2 X3) \Rightarrow (r2\_pboole (u1\_struct\_0 X0) \\
& (k9\_msualg\_6 X0 X1 X2) X3))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 \\
& X0) \wedge (l1\_msualg\_1 X0))) \wedge (((v4\_msualg\_1 X1 X0) \wedge (l3\_msualg\_1 X1 \\
& X0) \wedge (m1\_msualg\_4 X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 \\
& X0 X1)))) \Rightarrow ((v3\_msualg\_6 (k8\_msualg\_6 X0 X1 X2) X0 X1) \wedge ((v4\_msualg\_6 \\
& (k8\_msualg\_6 X0 X1 X2) X0 X1) \wedge (m1\_msualg\_4 (k8\_msualg\_6 X0 X1 X2) \\
& (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 X0 X1))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 \\ & X0)\wedge(l1\_msualg\_1 X0)))\wedge(((v4\_msualg\_1 X1 X0)\wedge(l3\_msualg\_1 X1 \\ & X0))\wedge(m1\_msualg\_4 X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 \\ & X0 X1))))\Rightarrow((v4\_msualg\_6 (k7\_msualg\_6 X0 X1 X2) X0 X1)\wedge(m1\_msualg\_4 \\ & (k7\_msualg\_6 X0 X1 X2) (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 \\ & X0 X1))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 \\ & X0)\wedge(l1\_msualg\_1 X0)))\wedge(((v4\_msualg\_1 X1 X0)\wedge(l3\_msualg\_1 X1 \\ & X0))\wedge(m1\_msualg\_4 X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 \\ & X0 X1))))\Rightarrow((v3\_msualg\_6 (k6\_msualg\_6 X0 X1 X2) X0 X1)\wedge(m1\_msualg\_4 \\ & (k6\_msualg\_6 X0 X1 X2) (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 \\ & X0 X1))) \end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 \\ & X0)\wedge(l1\_msualg\_1 X0)))\wedge(((v4\_msualg\_1 X1 X0)\wedge(l3\_msualg\_1 X1 \\ & X0))\wedge(m1\_msualg\_4 X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 \\ & X0 X1))))\Rightarrow((v2\_msualg\_4 (k10\_msualg\_6 X0 X1 X2) X0 X1)\wedge((v3\_msualg\_6 \\ & (k10\_msualg\_6 X0 X1 X2) X0 X1)\wedge((v4\_msualg\_6 (k10\_msualg\_6 X0 X1 \\ & X2) X0 X1)\wedge(m1\_msualg\_4 (k10\_msualg\_6 X0 X1 X2) (u1\_struct\_0 X0) \\ & (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 X0 X1)))))) \end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 X0)\wedge(l1\_msualg\_1 \\ & X0)))\Rightarrow(\forall X1.((v4\_msualg\_1 X1 X0)\wedge(l3\_msualg\_1 X1 X0))\Rightarrow \\ & (\forall X2.(m1\_msualg\_4 X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) \\ & (u3\_msualg\_1 X0 X1))\Rightarrow(\forall X3.((v2\_msualg\_4 X3 X0 X1)\wedge((v3\_msualg\_6 \\ & X3 X0 X1)\wedge((v4\_msualg\_6 X3 X0 X1)\wedge(m1\_msualg\_4 X3 (u1\_struct\_0 \\ & X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 X0 X1))))))\Rightarrow((X3 = k10\_msualg\_6 \\ & X0 X1 X2)\Leftrightarrow((r2\_pboole (u1\_struct\_0 X0) X2 X3)\wedge(\forall X4.((v2\_msualg\_4 \\ & X4 X0 X1)\wedge((v3\_msualg\_6 X4 X0 X1)\wedge((v4\_msualg\_6 X4 X0 X1)\wedge(m1\_msualg\_4 \\ & X4 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 X0 X1))))))\Rightarrow \\ & ((r2\_pboole (u1\_struct\_0 X0) X2 X4)\Rightarrow(r2\_pboole (u1\_struct\_0 X0) \\ & X3 X4)))))) \end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_msualg\_1 \\
& X0))) \Rightarrow (\forall X1.((v4\_msualg\_1 X1 X0) \wedge (l3\_msualg\_1 X1 X0)) \Rightarrow \\
& (\forall X2.(m1\_msualg\_4 X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) \\
& (u3\_msualg\_1 X0 X1)) \Rightarrow (\forall X3.((v3\_msualg\_6 X3 X0 X1) \wedge ((v4\_msualg\_6 \\
& X3 X0 X1) \wedge (m1\_msualg\_4 X3 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) ( \\
& u3\_msualg\_1 X0 X1)))) \Rightarrow ((X3 = k8\_msualg\_6 X0 X1 X2) \Leftrightarrow ((r2\_pboole \\
& (u1\_struct\_0 X0) X2 X3) \wedge (\forall X4.((v3\_msualg\_6 X4 X0 X1) \wedge (( \\
& v4\_msualg\_6 X4 X0 X1) \wedge (m1\_msualg\_4 X4 (u1\_struct\_0 X0) (u3\_msualg\_1 \\
& X0 X1) (u3\_msualg\_1 X0 X1)))) \Rightarrow ((r2\_pboole (u1\_struct\_0 X0) X2 X4) \Rightarrow \\
& (r2\_pboole (u1\_struct\_0 X0) X3 X4)))))))))
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_msualg\_1 \\
& X0))) \Rightarrow (\forall X1.((v4\_msualg\_1 X1 X0) \wedge (l3\_msualg\_1 X1 X0)) \Rightarrow \\
& (\forall X2.(m1\_msualg\_4 X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) \\
& (u3\_msualg\_1 X0 X1)) \Rightarrow (\forall X3.((v4\_msualg\_6 X3 X0 X1) \wedge (m1\_msualg\_4 \\
& X3 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 X0 X1))) \Rightarrow ( \\
& (X3 = k7\_msualg\_6 X0 X1 X2) \Leftrightarrow ((r2\_pboole (u1\_struct\_0 X0) X2 X3) \wedge \\
& (\forall X4.((v4\_msualg\_6 X4 X0 X1) \wedge (m1\_msualg\_4 X4 (u1\_struct\_0 \\
& X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 X0 X1))) \Rightarrow ((r2\_pboole (u1\_struct\_0 \\
& X0) X2 X4) \Rightarrow (r2\_pboole (u1\_struct\_0 X0) X3 X4)))))))))
\end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_msualg\_1 \\
& X0))) \Rightarrow (\forall X1.((v4\_msualg\_1 X1 X0) \wedge (l3\_msualg\_1 X1 X0)) \Rightarrow \\
& (\forall X2.(m1\_msualg\_4 X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) \\
& (u3\_msualg\_1 X0 X1)) \Rightarrow (\forall X3.((v3\_msualg\_6 X3 X0 X1) \wedge (m1\_msualg\_4 \\
& X3 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 X0 X1))) \Rightarrow ( \\
& (X3 = k6\_msualg\_6 X0 X1 X2) \Leftrightarrow ((r2\_pboole (u1\_struct\_0 X0) X2 X3) \wedge \\
& (\forall X4.((v3\_msualg\_6 X4 X0 X1) \wedge (m1\_msualg\_4 X4 (u1\_struct\_0 \\
& X0) (u3\_msualg\_1 X0 X1) (u3\_msualg\_1 X0 X1))) \Rightarrow ((r2\_pboole (u1\_struct\_0 \\
& X0) X2 X4) \Rightarrow (r2\_pboole (u1\_struct\_0 X0) X3 X4)))))))))
\end{aligned} \tag{9}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_msualg\_1 \\
& X0))) \Rightarrow (\forall X1.((v4\_msualg\_1 X1 X0) \wedge (l3\_msualg\_1 X1 X0)) \Rightarrow \\
& (\forall X2.(m1\_msualg\_4 X2 (u1\_struct\_0 X0) (u3\_msualg\_1 X0 X1) \\
& (u3\_msualg\_1 X0 X1)) \Rightarrow ((r2\_pboole (u1\_struct\_0 X0) (k9\_msualg\_6 \\
& X0 X1 X2) (k10\_msualg\_6 X0 X1 X2)) \wedge ((r2\_pboole (u1\_struct\_0 X0) \\
& (k6\_msualg\_6 X0 X1 X2) (k10\_msualg\_6 X0 X1 X2)) \wedge ((r2\_pboole (u1\_struct\_0 \\
& X0) (k7\_msualg\_6 X0 X1 X2) (k10\_msualg\_6 X0 X1 X2)) \wedge (r2\_pboole ( \\
& u1\_struct\_0 X0) (k8\_msualg\_6 X0 X1 X2) (k10\_msualg\_6 X0 X1 X2)))))))))
\end{aligned}$$