t5_osalg_2 (TMJEo-prSxf64fuAJrPVGmEJL6Aq8cRGbBKY)

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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 $m1\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $r8\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $v3\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u4\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $u4\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_msualg\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1\_relat\_1 : \iota \Rightarrow o$ be given. Let $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$ 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 $v1\_xboole\_0 : \iota \Rightarrow o$ be given. Let $l1\_struct\_0 : \iota \Rightarrow o$ be given. Let $l2\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m3\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $l1\_orders\_2 : \iota \Rightarrow o$ be given. Assume the following.

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

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0\ X0) \wedge (((v1\_relat\_1\ X1) \wedge ((v4\_relat\_1\ X1\ X0) \wedge ((v1\_funct\_1\ X1) \wedge (v1\_partfun1\ X1\ X0)))) \wedge ((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1\ X2\ X0) \wedge ((v1\_funct\_1\ X2) \wedge (v1\_partfun1\ X2\ X0)))))) \Rightarrow ((r8\_pboole\ X0\ X1\ X2) \Leftrightarrow (X1 = X2)) \tag{2}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge (l1\_struct\_0\ X0)) \Rightarrow (\neg v1\_xboole\_0\ (u1\_struct\_0\ X0)) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.((l1\_struct\_0\ X0)\wedge(l2\_msualg\_1\ X1\ X0))\Rightarrow((v1\_relat\_1\ (u3\_msualg\_1\ X0\ X1))\wedge((v4\_relat\_1\ (u3\_msualg\_1\ X0\ X1)\ (u1\_struct\_0\ X0))\wedge((v1\_funct\_1\ (u3\_msualg\_1\ X0\ X1))\wedge(v1\_partfun1\ (u3\_msualg\_1\ X0\ X1)\ (u1\_struct\_0\ X0)))))) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v4\_relat\_1\ X1\ X0)\wedge((v1\_funct\_1\ X1)\wedge(v1\_partfun1\ X1\ X0))))\Rightarrow(\forall X2.(m3\_pboole\ X2\ X0\ X1)\Rightarrow((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ X0)\wedge((v1\_funct\_1\ X2)\wedge(v1\_partfun1\ X2\ X0))))) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge((v4\_osalg\_1\ X0)\wedge((v5\_osalg\_1\ X0)\wedge(l3\_osalg\_1\ X0)))))\wedge((v12\_osalg\_1\ X1\ X0)\wedge(l3\_msualg\_1\ X1\ X0)))\Rightarrow(\forall X2.(m2\_osalg\_2\ X2\ X0\ X1)\Rightarrow(m3\_pboole\ X2\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1))) \tag{6}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0)))\wedge(l3\_msualg\_1\ X1\ X0))\Rightarrow(\forall X2.(m1\_msualg\_2\ X2\ X0\ X1)\Rightarrow(l3\_msualg\_1\ X2\ X0)) \tag{7}$$

Assume the following.

$$\forall X0.(l3\_osalg\_1\ X0)\Rightarrow((l1\_osalg\_1\ X0)\wedge(l2\_osalg\_1\ X0)) \tag{8}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0))\Rightarrow(\forall X1.(l3\_msualg\_1\ X1\ X0)\Rightarrow(l2\_msualg\_1\ X1\ X0)) \tag{9}$$

Assume the following.

$$\forall X0.(l2\_osalg\_1\ X0)\Rightarrow((l1\_msualg\_1\ X0)\wedge(l1\_orders\_2\ X0)) \tag{10}$$

Assume the following.

$$\forall X0.(l1\_orders\_2\ X0)\Rightarrow(l1\_struct\_0\ X0) \tag{11}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0)))\Rightarrow(\forall X1.(l3\_msualg\_1\ X1\ X0)\Rightarrow(\forall X2.(l3\_msualg\_1\ X2\ X0)\Rightarrow((m1\_msualg\_2\ X2\ X0\ X1)\Leftrightarrow((m3\_pboole\ (u3\_msualg\_1\ X0\ X2)\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1))\wedge(\forall X3.(m3\_pboole\ X3\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1))\Rightarrow((r8\_pboole\ (u1\_struct\_0\ X0)\ X3\ (u3\_msualg\_1\ X0\ X2))\Rightarrow((v3\_msualg\_2\ X3\ X0\ X1)\wedge(r8\_pboole\ (u4\_struct\_0\ X0)\ (u4\_msualg\_1\ X0\ X2)\ (k4\_msualg\_2\ X0\ X1\ X3)))))))) \tag{12}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge((v4\_osalg\_1\ X0)\wedge((v5\_osalg\_1\ X0)\wedge(l3\_osalg\_1\ X0)))))\Rightarrow(\forall X1.((v12\_osalg\_1\ X1\ X0)\wedge(l3\_msualg\_1\ X1\ X0))\Rightarrow(\forall X2.(m3\_pboole\ X2\ (u1\_struct\_0\ X0)\ (u3\_msualg\_1\ X0\ X1))\Rightarrow((m2\_osalg\_2\ X2\ X0\ X1)\Leftrightarrow((v1\_relat\_1\ X2)\wedge((v4\_relat\_1\ X2\ (u1\_struct\_0\ X0))\wedge((v1\_funct\_1\ X2)\wedge((v1\_partfun1\ X2\ (u1\_struct\_0\ X0))\wedge(v11\_osalg\_1\ X2\ X0))))))))) \tag{13}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge((v4\_osalg\_1\ X0)\wedge((v5\_osalg\_1\ X0)\wedge(l3\_osalg\_1\ X0)))))\Rightarrow(\forall X1.((v12\_osalg\_1\ X1\ X0)\wedge(l3\_msualg\_1\ X1\ X0))\Rightarrow(\forall X2.(l3\_msualg\_1\ X2\ X0)\Rightarrow(((v12\_osalg\_1\ X2\ X0)\wedge(m1\_msualg\_2\ X2\ X0\ X1))\Leftrightarrow((m2\_osalg\_2\ (u3\_msualg\_1\ X0\ X2)\ X0\ X1)\wedge(\forall X3.(m2\_osalg\_2\ X3\ X0\ X1)\Rightarrow((r8\_pboole\ (u1\_struct\_0\ X0)\ X3\ (u3\_msualg\_1\ X0\ X2))\Rightarrow((v3\_msualg\_2\ X3\ X0\ X1)\wedge(r8\_pboole\ (u4\_struct\_0\ X0)\ (u4\_msualg\_1\ X0\ X2)\ (k4\_msualg\_2\ X0\ X1\ X3)))))))))$$