t51_bcialg_4 (TMSxwVeftJrTdxPtzcPhpW96puixewztRyc)

October 27, 2020

Let $v2\_struct\_0 : \iota \Rightarrow o$ be given. Let $v3\_bcialg\_1 : \iota \Rightarrow o$ be given. Let $v4\_bcialg\_1 : \iota \Rightarrow o$ be given. Let $v5\_bcialg\_1 : \iota \Rightarrow o$ be given. Let $v7\_bcialg\_1 : \iota \Rightarrow o$ be given. Let $v8\_bcialg\_1 : \iota \Rightarrow o$ be given. Let $v2\_bcialg\_4 : \iota \Rightarrow o$ be given. Let $l1\_bcialg\_4 : \iota \Rightarrow o$ be given. Let $v8\_bcialg\_4 : \iota \Rightarrow o$ be given. Let $v3\_bcialg\_4 : \iota \Rightarrow o$ be given. Let $v4\_bcialg\_4 : \iota \Rightarrow o$ be given. Let $l2\_bcialg\_1 : \iota \Rightarrow o$ be given. Let $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $k1\_bcialg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1\_bcialg\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $l1\_bcialg\_1 : \iota \Rightarrow o$ be given. Let $l2\_struct\_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((v3\_bcialg\_1\ X0) \wedge ((v4\_bcialg\_1\ X0) \wedge ((v5\_bcialg\_1\ X0) \wedge ((v7\_bcialg\_1\ X0) \wedge (l2\_bcialg\_1\ X0))))))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0)) \Rightarrow (k1\_bcialg\_1\ X0\ X1\ (k1\_bcialg\_1\ X0\ X1\ (k1\_bcialg\_1\ X0\ X1\ X2)) = k1\_bcialg\_1\ X0\ X1\ X2))) \tag{1}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((v3\_bcialg\_1\ X0) \wedge ((v4\_bcialg\_1\ X0) \wedge ((v5\_bcialg\_1\ X0) \wedge ((v7\_bcialg\_1\ X0) \wedge (l2\_bcialg\_1\ X0))))))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ X0)) \Rightarrow (k1\_bcialg\_1\ X0\ (k1\_bcialg\_1\ X0\ X1\ X2)\ X3 = k1\_bcialg\_1\ X0\ (k1\_bcialg\_1\ X0\ X1\ X3)\ X2)))) \tag{2}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((v3\_bcialg\_1\ X0) \wedge ((v4\_bcialg\_1\ X0) \wedge ((v5\_bcialg\_1\ X0) \wedge ((v7\_bcialg\_1\ X0) \wedge (l2\_bcialg\_1\ X0))))))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ X0)) \Rightarrow ((r1\_bcialg\_1\ X0\ X1\ X2) \Rightarrow ((r1\_bcialg\_1\ X0\ (k1\_bcialg\_1\ X0\ X1\ X3)\ (k1\_bcialg\_1\ X0\ X2\ X3)) \wedge (r1\_bcialg\_1\ X0\ (k1\_bcialg\_1\ X0\ X3\ X2)\ (k1\_bcialg\_1\ X0\ X3\ X1))))))) \tag{3}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v3\_bcialg\_1\ X0)\wedge((v4\_bcialg\_1\ X0)\wedge((v5\_bcialg\_1\ X0)\wedge((v7\_bcialg\_1\ X0)\wedge(l2\_bcialg\_1\ X0)))))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(k1\_bcialg\_1\ X0\ X1\ (k4\_struct\_0\ X0) = X1)) \tag{4}$$

Assume the following.

$$\forall X0.(l2\_bcialg\_1\ X0)\Rightarrow((l1\_bcialg\_1\ X0)\wedge(l2\_struct\_0\ X0)) \tag{5}$$

Assume the following.

$$\forall X0.(l1\_bcialg\_4\ X0)\Rightarrow((l2\_bcialg\_1\ X0)\wedge(l2\_struct\_0\ X0)) \tag{6}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((l1\_bcialg\_1\ X0)\wedge((m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))))\Rightarrow(m1\_subset\_1\ (k1\_bcialg\_1\ X0\ X1\ X2)\ (u1\_struct\_0\ X0)) \tag{7}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v3\_bcialg\_1\ X0)\wedge((v4\_bcialg\_1\ X0)\wedge((v5\_bcialg\_1\ X0)\wedge((v7\_bcialg\_1\ X0)\wedge((v8\_bcialg\_1\ X0)\wedge((v2\_bcialg\_4\ X0)\wedge(l1\_bcialg\_4\ X0)))))))\Rightarrow((v3\_bcialg\_4\ X0)\Leftrightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow(k1\_bcialg\_1\ X0\ X1\ (k1\_bcialg\_1\ X0\ X1\ X2) = k1\_bcialg\_1\ X0\ X2\ (k1\_bcialg\_1\ X0\ X2\ X1))))) \tag{8}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l2\_bcialg\_1\ X0))\Rightarrow((v7\_bcialg\_1\ X0)\Leftrightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow(((k1\_bcialg\_1\ X0\ X1\ X2 = k4\_struct\_0\ X0)\wedge(k1\_bcialg\_1\ X0\ X2\ X1 = k4\_struct\_0\ X0))\Rightarrow(X1 = X2))))) \tag{9}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l2\_bcialg\_1\ X0))\Rightarrow((v5\_bcialg\_1\ X0)\Leftrightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(k1\_bcialg\_1\ X0\ X1\ X1 = k4\_struct\_0\ X0))) \tag{10}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v3\_bcialg\_1\ X0)\wedge((v4\_bcialg\_1\ X0)\wedge((v5\_bcialg\_1\ X0)\wedge((v7\_bcialg\_1\ X0)\wedge((v8\_bcialg\_1\ X0)\wedge((v2\_bcialg\_4\ X0)\wedge(l1\_bcialg\_4\ X0)))))))\Rightarrow((v8\_bcialg\_4\ X0)\Leftrightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow(k1\_bcialg\_1\ X0\ X1\ (k1\_bcialg\_1\ X0\ X2\ X1) = X1)))) \tag{11}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v3\_bcialg\_1\ X0)\wedge((v4\_bcialg\_1\ X0)\wedge((v5\_bcialg\_1\ X0)\wedge((v7\_bcialg\_1\ X0)\wedge((v8\_bcialg\_1\ X0)\wedge((v2\_bcialg\_4\ X0)\wedge(l1\_bcialg\_4\ X0)))))))\Rightarrow((v4\_bcialg\_4\ X0)\Leftrightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow(k1\_bcialg\_1\ X0\ (k1\_bcialg\_1\ X0\ X1\ X2)\ X2 = k1\_bcialg\_1\ X0\ X1\ X2)))) \tag{12}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l2\_bcialg\_1\ X0))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow((r1\_bcialg\_1\ X0\ X1\ X2)\Leftrightarrow(k1\_bcialg\_1\ X0\ X1\ X2 = k4\_struct\_0\ X0)))) \tag{13}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v3\_bcialg\_1\ X0)\wedge((v4\_bcialg\_1\ X0)\wedge((v5\_bcialg\_1\ X0)\wedge((v7\_bcialg\_1\ X0)\wedge((v8\_bcialg\_1\ X0)\wedge((v2\_bcialg\_4\ X0)\wedge(l1\_bcialg\_4\ X0)))))))\Rightarrow((v8\_bcialg\_4\ X0)\Leftrightarrow((v3\_bcialg\_4\ X0)\wedge(v4\_bcialg\_4\ X0)))$$