

# t51\_bcialg\_1 (TMNVd- brPq6DXLp4Zj11YbTysYNDDevL8hccQ)

October 27, 2020

Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l2\_bcialg\_1 : \iota \Rightarrow o$  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  $v13\_bcialg\_1 : \iota \Rightarrow o$  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  $k4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_bcialg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l1\_bcialg\_1 : \iota \Rightarrow o$  be given. Let  $l2\_struct\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (l2\_bcialg\_1 X0)) \Rightarrow (((\neg v2\_struct\_0 X0) \wedge (v3\_bcialg\_1 X0) \wedge (v4\_bcialg\_1 X0) \wedge (v5\_bcialg\_1 X0) \wedge \\
 & ((v7\_bcialg\_1 X0) \wedge (v13\_bcialg\_1 X0) \wedge (l2\_bcialg\_1 X0)))) \Leftrightarrow \\
 & (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow ((k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 X1 X2) (k1\_bcialg\_1 X0 X1 X3) = k1\_bcialg\_1 X0 X3 X2) \wedge (k2\_bcialg\_1 X0 X1 = X1)))))) \tag{1}
 \end{aligned}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (l2\_bcialg\_1 X0)) \Rightarrow (((\neg v2\_struct\_0 X0) \wedge (v3\_bcialg\_1 X0) \wedge (v4\_bcialg\_1 X0) \wedge (v5\_bcialg\_1 X0) \wedge \\
 & ((v7\_bcialg\_1 X0) \wedge (v13\_bcialg\_1 X0) \wedge (l2\_bcialg\_1 X0)))) \Leftrightarrow \\
 & (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow ((k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 X2 X1) (k1\_bcialg\_1 X0 X3 X1) = k1\_bcialg\_1 X0 X3 X2) \wedge (k1\_bcialg\_1 X0 X1 (k4\_struct\_0 X0) = X1)))))) \tag{2}
 \end{aligned}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (v3\_bcialg\_1 X0) \wedge (v4\_bcialg\_1 X0) \wedge (v5\_bcialg\_1 X0) \wedge (v7\_bcialg\_1 X0) \wedge (l2\_bcialg\_1 X0)) \Rightarrow \\
 & ((\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (k1\_bcialg\_1 X0 X2 X1 = k1\_bcialg\_1 X0 X1 X2))) \Leftrightarrow (v13\_bcialg\_1 X0)) \tag{3}
 \end{aligned}$$

Assume the following.

$$\forall X0.\exists X1.m1\_subset\_1 X1 X0 \quad (4)$$

Assume the following.

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

Assume the following.

$$\forall X0.(l2\_struct\_0 X0)\Rightarrow(m1\_subset\_1 (k4\_struct\_0 X0) (u1\_struct\_0 X0)) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_struct\_0 X0)\wedge(l2\_bcialg\_1 X0))\wedge(m1\_subset\_1 X1 (u1\_struct\_0 X0)))\Rightarrow(m1\_subset\_1 (k2\_bcialg\_1 X0 X1) (u1\_struct\_0 X0)) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((l1\_bcialg\_1 X0)\wedge((m1\_subset\_1 X1 (u1\_struct\_0 X0))\wedge(m1\_subset\_1 X2 (u1\_struct\_0 X0))))\Rightarrow(m1\_subset\_1 (k1\_bcialg\_1 X0 X1 X2) (u1\_struct\_0 X0)) \quad (8)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge(l2\_bcialg\_1 X0))\Rightarrow(\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0))\Rightarrow(k2\_bcialg\_1 X0 X1 = k1\_bcialg\_1 X0 (k4\_struct\_0 X0 X1))) \quad (9)$$

### Theorem 1

$$\begin{aligned} &\forall X0.((\neg v2\_struct\_0 X0)\wedge(l2\_bcialg\_1 X0))\Rightarrow(((\neg v2\_struct\_0 X0)\wedge((v3\_bcialg\_1 X0)\wedge((v4\_bcialg\_1 X0)\wedge((v5\_bcialg\_1 X0)\wedge((v7\_bcialg\_1 X0)\wedge((v13\_bcialg\_1 X0)\wedge(l2\_bcialg\_1 X0)))))))\Leftrightarrow \\ &(\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0))\Rightarrow(\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0))\Rightarrow(\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0))\Rightarrow((k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 X1 X2) (k1\_bcialg\_1 X0 X1 X3) = k1\_bcialg\_1 X0 X2 X3)\wedge(k1\_bcialg\_1 X0 X1 (k4\_struct\_0 X0) = X1)))))) \end{aligned}$$