

t15\_bcialg\_4  
(TMH7MpsW6KTJZ1QnS4YyerF9xKLkUqZH7x2)

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

$$\begin{aligned} \forall X0. (&(\neg v2\_struct\_0 X0) \wedge ((v3\_bcialg\_1 X0) \wedge ((v4\_bcialg\_1 \\ &X0) \wedge ((v5\_bcialg\_1 X0) \wedge ((v7\_bcialg\_1 X0) \wedge ((v2\_bcialg\_4 X0) \wedge \\ &(l1\_bcialg\_4 X0)))))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 \\ &X0)) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. \\ &(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (k1\_bcialg\_1 X0 (k1\_bcialg\_1 \\ &X0 X1 X2) X3 = k1\_bcialg\_1 X0 X1 (k1\_bcialg\_4 X0 X2 X3)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0. (l2\_bcialg\_1 X0) \Rightarrow ((l1\_bcialg\_1 X0) \wedge (l2\_struct\_0 X0)) \quad (2)$$

Assume the following.

$$\forall X0. (l1\_bcialg\_4 X0) \Rightarrow ((l2\_bcialg\_1 X0) \wedge (l2\_struct\_0 X0)) \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. (&(l1\_bcialg\_4 X0) \wedge ((m1\_subset\_1 \\ &X1 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 X0)))) \Rightarrow (m1\_subset\_1 \\ &(k1\_bcialg\_4 X0 X1 X2) (u1\_struct\_0 X0)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. (&(l1\_bcialg\_1 X0) \wedge ((m1\_subset\_1 \\ &X1 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 X0)))) \Rightarrow (m1\_subset\_1 \\ &(k1\_bcialg\_1 X0 X1 X2) (u1\_struct\_0 X0)) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l2\_bialg\_1 X0)) \Rightarrow (\forall X1. \\
& (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 \\
& (u1\_struct\_0 X0)) \Rightarrow ((r1\_bialg\_1 X0 X1 X2) \Leftrightarrow (k1\_bialg\_1 X0 X1 X2 = \\
& k4\_struct\_0 X0)))) \\
& \tag{6}
\end{aligned}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v3\_bialg\_1 X0) \wedge ((v4\_bialg\_1 \\
& X0) \wedge ((v5\_bialg\_1 X0) \wedge ((v7\_bialg\_1 X0) \wedge ((v2\_bialg\_4 X0) \wedge \\
& (l1\_bialg\_4 X0))))))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. \\
& (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow ((r1\_bialg\_1 X0 (k1\_bialg\_1 \\
& X0 X1 X2) X3) \Leftrightarrow (r1\_bialg\_1 X0 X1 (k1\_bialg\_4 X0 X2 X3))))))
\end{aligned}$$