

# t23\_bciideal (TMSDzpasuG- gKypW4zjzqroAE8NXLVphBYQh)

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Let  $v2\_struct.0 : \iota \Rightarrow o$  be given. Let  $v3\_bciideal : \iota \Rightarrow o$  be given. Let  $v4\_bciideal : \iota \Rightarrow o$  be given. Let  $v5\_bciideal : \iota \Rightarrow o$  be given. Let  $v7\_bciideal : \iota \Rightarrow o$  be given. Let  $v8\_bciideal : \iota \Rightarrow o$  be given. Let  $l2\_bciideal : \iota \Rightarrow o$  be given. Let  $v3\_bciideal : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_bciideal : \iota \Rightarrow \iota$  be given. Let  $m2\_bciideal : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset.1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct.0 : \iota \Rightarrow \iota$  be given. Let  $r1\_bciideal : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_bciideal : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v12\_bciideal : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l2\_struct.0 : \iota \Rightarrow o$  be given. Let  $u2\_struct.0 : \iota \Rightarrow \iota$  be given. Let  $l1\_bciideal : \iota \Rightarrow o$  be given. Let  $k2\_bciideal : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_struct.0 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct.0 X0) \wedge ((v3\_bciideal X0) \wedge ((v4\_bciideal X0) \wedge ((v5\_bciideal X0) \wedge ((v7\_bciideal X0) \wedge (l2\_bciideal X0)))))) \Rightarrow \\ & (\forall X1.(m1\_subset.1 X1 (u1\_struct.0 X0)) \Rightarrow (\forall X2.(m1\_subset.1 X2 (u1\_struct.0 X0)) \Rightarrow (\forall X3.(m1\_subset.1 X3 (u1\_struct.0 X0)) \Rightarrow ((r1\_bciideal X0 X1 X2) \Rightarrow ((r1\_bciideal X0 (k1\_bciideal X0 X1 X3) (k1\_bciideal X0 X2 X3)) \wedge (r1\_bciideal X0 (k1\_bciideal X0 X3 X2) (k1\_bciideal X0 X3 X1))))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct.0 X0) \wedge ((v3\_bciideal X0) \wedge ((v4\_bciideal X0) \wedge ((v5\_bciideal X0) \wedge ((v7\_bciideal X0) \wedge (l2\_bciideal X0)))))) \Rightarrow \\ & ((v12\_bciideal (k4\_bciideal X0) X0) \wedge (m2\_bciideal (k4\_bciideal X0) X0)) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct.0 X0) \wedge ((v3\_bciideal X0) \wedge ((v4\_bciideal X0) \wedge ((v5\_bciideal X0) \wedge ((v7\_bciideal X0) \wedge ((v8\_bciideal X0) \wedge (l2\_bciideal X0)))))) \Rightarrow (\forall X1.(m1\_subset.1 X1 (u1\_struct.0 X0)) \Rightarrow (\forall X2.(m1\_subset.1 X2 (u1\_struct.0 X0)) \Rightarrow ((r1\_bciideal X0 (k1\_bciideal X0 X1 (k1\_bciideal X0 X1 X2)) X2) \wedge (r1\_bciideal X0 (k1\_bciideal X0 X1 (k1\_bciideal X0 X1 X2)) X1)))) \end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.(l2\_struct\_0 X0) \Rightarrow (m1\_subset\_1 (u2\_struct\_0 X0) (u1\_struct\_0 X0)) \quad (4)$$

Assume the following.

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

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((l1\_bcialg\_1 X0) \wedge (m1\_subset\_1 \\ & X1 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 X0))) \Rightarrow (m1\_subset\_1 \\ & (k1\_bcialg\_1 X0 X1 X2) (u1\_struct\_0 X0)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (l2\_bcialg\_1 X0)) \Rightarrow ((v8\_bcialg\_1 \\ & X0) \Leftrightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (k2\_bcialg\_1 \\ & X0 X1 = k4\_struct\_0 X0))) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.(l2\_struct\_0 X0) \Rightarrow (k4\_struct\_0 X0 = u2\_struct\_0 X0) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v3\_bcialg\_1 X0) \wedge ((v4\_bcialg\_1 \\ & X0) \wedge ((v5\_bcialg\_1 X0) \wedge ((v7\_bcialg\_1 X0) \wedge ((v8\_bcialg\_1 X0) \wedge \\ & (l2\_bcialg\_1 X0))))))) \Rightarrow (\forall X1. (m2\_bcialg\_1 X1 X0) \Rightarrow ((v3\_bcideal \\ & X1 X0) \Leftrightarrow (\forall X2. (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. \\ & (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4. (m1\_subset\_1 X4 \\ & (u1\_struct\_0 X0)) \Rightarrow (((k1\_bcialg\_1 X0 (k1\_bcialg\_1 X0 X2 X3) X4 \in \\ & X1) \wedge (X4 \in X1)) \Rightarrow (k1\_bcialg\_1 X0 X2 (k1\_bcialg\_1 X0 X3 (k1\_bcialg\_1 \\ & X0 X3 X2)) \in X1))))))) \end{aligned} \quad (9)$$

Assume the following.

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

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (l2\_bcialg\_1 X0)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (k2\_bcialg\_1 X0 X1 = k1\_bcialg\_1 \\ & X0 (k4\_struct\_0 X0) X1)) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v3\_bcialg\_1 X0) \wedge ((v4\_bcialg\_1 \\ & X0) \wedge ((v5\_bcialg\_1 X0) \wedge ((v7\_bcialg\_1 X0) \wedge (l2\_bcialg\_1 X0)))))) \Rightarrow \\ & (k4\_bcialg\_1 X0 = ReplSep (toset (\lambda X1 : \iota.m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0))) (\lambda X1 : \iota.r1\_bcialg\_1 X0 (k4\_struct\_0 X0) X1) (\lambda X1 : \\ & \iota.X1)) \end{aligned} \tag{12}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v3\_bcialg\_1 X0) \wedge ((v4\_bcialg\_1 \\ & X0) \wedge ((v5\_bcialg\_1 X0) \wedge ((v7\_bcialg\_1 X0) \wedge ((v8\_bcialg\_1 X0) \wedge \\ & (l2\_bcialg\_1 X0))))))) \Rightarrow ((v3\_bciideal (k4\_bcialg\_1 X0) X0) \wedge \\ & m2\_bcialg\_1 (k4\_bcialg\_1 X0) X0) \end{aligned}$$