

## t34\_diraf

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Let  $v7\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_analoaf : \iota \Rightarrow o$  be given. Let  $l1\_analoaf : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $r3\_diraf : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_diraf : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v7\_struct\_0 X0) \wedge ((v2\_analoaf X0) \wedge (l1\_analoaf \\
 & \quad X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
 & \quad (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 \\
 & \quad (u1\_struct\_0 X0)) \Rightarrow (\forall X4. (m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow \\
 & \quad (\forall X5. (m1\_subset\_1 X5 (u1\_struct\_0 X0)) \Rightarrow (\forall X6. (m1\_subset\_1 \\
 & \quad X6 (u1\_struct\_0 X0)) \Rightarrow (\neg (X1 \neq X2) \wedge ((\neg (\neg (r2\_diraf X0 X1 X2 X3 X4) \wedge \\
 & \quad (r2\_diraf X0 X1 X2 X5 X6)) \wedge ((\neg (r2\_diraf X0 X1 X2 X3 X4) \wedge (r2\_diraf \\
 & \quad X0 X5 X6 X1 X2)) \wedge ((\neg (r2\_diraf X0 X3 X4 X1 X2) \wedge (r2\_diraf X0 X5 X6 X1 X2)) \wedge \\
 & \quad (\neg (r2\_diraf X0 X3 X4 X1 X2) \wedge (r2\_diraf X0 X1 X2 X5 X6)))))) \wedge (\neg r2\_diraf \\
 & \quad X0 X3 X4 X5 X6)))))))))
 \end{aligned}
 \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v7\_struct\_0 X0) \wedge ((v2\_analoaf X0) \wedge (l1\_analoaf \\
 & \quad X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
 & \quad (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 \\
 & \quad (u1\_struct\_0 X0)) \Rightarrow (\forall X4. (m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow \\
 & \quad ((r2\_diraf X0 X1 X2 X3 X4) \Rightarrow ((r2\_diraf X0 X1 X2 X4 X3) \wedge ((r2\_diraf X0 \\
 & \quad X2 X1 X3 X4) \wedge ((r2\_diraf X0 X2 X1 X4 X3) \wedge ((r2\_diraf X0 X3 X4 X1 X2) \wedge \\
 & \quad (r2\_diraf X0 X3 X4 X2 X1) \wedge ((r2\_diraf X0 X4 X3 X1 X2) \wedge (r2\_diraf X0 X4 \\
 & \quad X3 X2 X1)))))))))
 \end{aligned}
 \tag{2}$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v7\_struct\_0 X0) \wedge ((v2\_analoaf X0) \wedge (l1\_analoaf \\ X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ (u1\_struct\_0 X0)) \Rightarrow ((r2\_diraf X0 X1 X2 X1 X3) \Rightarrow (r2\_diraf X0 X2 X1 X2 \\ X3)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v7\_struct\_0 X0) \wedge ((v2\_analoaf X0) \wedge (l1\_analoaf \\ X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ (u1\_struct\_0 X0)) \Rightarrow ((r2\_diraf X0 X1 X2 X3 X3) \wedge (r2\_diraf X0 X3 X3 X1 \\ X2)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.(l1\_analoaf X0) \Rightarrow (l1\_struct\_0 X0) \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_analoaf X0)) \Rightarrow (\forall X1. \\ (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 \\ (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow \\ ((r3\_diraf X0 X1 X2 X3) \Leftrightarrow (r2\_diraf X0 X1 X2 X1 X3)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.(l1\_struct\_0 X0) \Rightarrow ((v2\_struct\_0 X0) \Rightarrow (v7\_struct\_0 X0)) \quad (7)$$

**Theorem 1**

$$\begin{aligned} \forall X0.((\neg v7\_struct\_0 X0) \wedge ((v2\_analoaf X0) \wedge (l1\_analoaf \\ X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow \\ (((r3\_diraf X0 X1 X2 X3) \wedge (r3\_diraf X0 X1 X2 X4)) \Rightarrow (r2\_diraf X0 X1 X2 \\ X3 X4)))))) \end{aligned}$$