

t13\_diraf

(TMbK4rUN7s3Nf57fq9uNtcfpTS3Lw9vPneC)

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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  $r1\_diraf : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $r2\_analoaf : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.(l1\_analoaf X0) \Rightarrow (l1\_struct\_0 X0) \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_analoaf X0)) \Rightarrow ((v2\_analoaf \\
& \quad X0) \Leftrightarrow ((\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 (\forall X7.(m1\_subset\_1 X7 (u1\_struct\_0 \\
& \quad X0)) \Rightarrow (\forall X8.(m1\_subset\_1 X8 (u1\_struct\_0 X0)) \Rightarrow ((r2\_analoaf \\
& \quad X0 X1 X2 X3 X3) \wedge (((r2\_analoaf X0 X1 X2 X2 X1) \Rightarrow (X1 = X2)) \wedge (((r2\_analoaf \\
& \quad X0 X1 X2 X5 X6) \wedge (r2\_analoaf X0 X1 X2 X7 X8)) \Rightarrow ((X1 = X2) \vee (r2\_analoaf \\
& \quad X0 X5 X6 X7 X8))) \wedge (((r2\_analoaf X0 X1 X2 X3 X4) \Rightarrow (r2\_analoaf X0 X2 X1 \\
& \quad X4 X3)) \wedge (((r2\_analoaf X0 X1 X2 X2 X3) \Rightarrow (r2\_analoaf X0 X1 X2 X1 X3)) \wedge \\
& \quad (\neg (r2\_analoaf X0 X1 X2 X1 X3) \wedge ((\neg r2\_analoaf X0 X1 X2 X2 X3) \wedge (\neg r2\_analoaf \\
& \quad X0 X1 X3 X3 X2))))))))) \wedge ((\exists X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\
& \quad X0)) \wedge (\exists X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \wedge (\exists X3. \\
& \quad (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \wedge (\exists X4.(m1\_subset\_1 X4 \\
& \quad (u1\_struct\_0 X0)) \wedge ((\neg r2\_analoaf X0 X1 X2 X3 X4) \wedge (\neg r2\_analoaf X0 \\
& \quad X1 X2 X4 X3)))))) \wedge ((\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow \\
& \quad (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 \\
& \quad X3 (u1\_struct\_0 X0)) \Rightarrow (\exists X4.(m1\_subset\_1 X4 (u1\_struct\_0 \\
& \quad X0)) \wedge ((r2\_analoaf X0 X1 X2 X3 X4) \wedge ((r2\_analoaf X0 X1 X3 X2 X4) \wedge (X2 \neq \\
& \quad X4)))))) \wedge (\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 (\neg (X1 \neq X3) \wedge ((r2\_analoaf X0 X3 X1 X1 X4) \wedge (\forall X5.(m1\_subset\_1 \\
& \quad X5 (u1\_struct\_0 X0)) \Rightarrow (\neg (r2\_analoaf X0 X2 X1 X1 X5) \wedge (r2\_analoaf \\
& \quad X0 X2 X3 X4 X5)))))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_analoaf X0)) \Rightarrow (\forall X1. \\
& \quad (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 \\
& \quad (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow \\
& \quad ((r1\_diraf X0 X1 X2 X3) \Leftrightarrow (r2\_analoaf X0 X1 X2 X2 X3))))
\end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.(l1\_struct\_0 X0) \Rightarrow ((\neg v7\_struct\_0 X0) \Rightarrow (\neg v2\_struct\_0 X0)) \tag{4}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v7\_struct\_0 X0) \wedge ((v2\_analoaf X0) \wedge (l1\_analoaf \\
& \quad X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
& \quad (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\exists X3.(m1\_subset\_1 X3 \\
& \quad (u1\_struct\_0 X0)) \wedge ((r1\_diraf X0 X1 X2 X3) \wedge (X2 \neq X3))))
\end{aligned}$$