

thm\_2EConseqConv\_2EIMP\_\_CONG\_\_conj\_\_strengthen  
(TMYs3h4z8q2T8gKtZwTKZAKdCHKTw6yXDZW)

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**Definition 1** We define  $c\_2Emin\_2E\_3D$  to be  $\lambda A.\lambda x \in A.\lambda y \in A.inj\_o (x = y)$   
of type  $\iota \Rightarrow \iota$ .

**Definition 2** We define  $c\_2Ebool\_2ET$  to be  $(ap (ap (c\_2Emin\_2E\_3D (2^2)) (\lambda V0x \in 2.V0x)) (\lambda V1x \in 2.V1x))$

**Definition 3** We define  $c\_2Ebool\_2E\_21$  to be  $\lambda A.\lambda a : \iota.(\lambda V0P \in (2^{A-27a}).(ap (ap (c\_2Emin\_2E\_3D (2^{A-27a}))$

**Definition 4** We define  $c\_2Ebool\_2EF$  to be  $(ap (c\_2Ebool\_2E\_21 2) (\lambda V0t \in 2.V0t))$ .

**Definition 5** We define  $c\_2Emin\_2E\_3D\_3D\_3E$  to be  $\lambda P \in 2.\lambda Q \in 2.inj\_o (p P \Rightarrow p Q)$   
of type  $\iota$ .

**Definition 6** We define  $c\_2Ebool\_2E\_7E$  to be  $(\lambda V0t \in 2.(ap (ap c\_2Emin\_2E\_3D\_3D\_3E V0t) c\_2Ebool\_2EF$

**Definition 7** We define  $c\_2Ebool\_2E\_2F\_5C$  to be  $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap (c\_2Ebool\_2E\_21 2) (\lambda V2t \in 2.V2t))$

Assume the following.

$$True \tag{1}$$

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$$\begin{aligned} & (\forall V0t \in 2.(((True \wedge (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \wedge True) \Leftrightarrow \\ & (p V0t)) \wedge (((False \wedge (p V0t)) \Leftrightarrow False) \wedge (((p V0t) \wedge False) \Leftrightarrow False) \wedge \\ & (((p V0t) \wedge (p V0t)) \Leftrightarrow (p V0t)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2.(((True \Rightarrow (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \Rightarrow True) \Leftrightarrow \\ & True) \wedge (((False \Rightarrow (p V0t)) \Leftrightarrow True) \wedge (((p V0t) \Rightarrow (p V0t)) \Leftrightarrow True) \wedge (( \\ & (p V0t) \Rightarrow False) \Leftrightarrow (\neg (p V0t)))))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & (\forall V0P \in (2^2).((\forall V1b \in 2.(p (ap V0P V1b))) \Leftrightarrow ((p (ap \\ & V0P c\_2Ebool\_2ET)) \wedge (p (ap V0P c\_2Ebool\_2EF)))))) \end{aligned} \tag{4}$$

**Theorem 1**

$$\begin{aligned} & (\forall V0x \in 2. (\forall V1x_{-27} \in 2. (\forall V2y \in 2. (\forall V3y_{-27} \in \\ 2. & (((p V2y) \Rightarrow ((p V1x_{-27}) \Rightarrow (p V0x))) \wedge ((p V1x_{-27}) \Rightarrow ((p V3y_{-27}) \Rightarrow \\ & (p V2y)))))) \Rightarrow (((p V1x_{-27}) \wedge (p V3y_{-27}) \Rightarrow ((p V0x) \wedge (p V2y)))))) \end{aligned}$$