

# thm\_2Eone\_2Eone\_\_prim\_\_rec (TMHZNFUqPYijB- JUTqU56q2GZTZ3zTcH5Xgj)

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**Definition 1** 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 2** We define `c_2Emin_2E_40` to be  $\lambda A.\lambda P \in 2^A.if (\exists x \in A.p (ap P x))$  then (the  $(\lambda x.x \in A \wedge p x)$ ) of type  $\iota \Rightarrow \iota$ .

**Definition 3** 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 4** We define `c_2Ebool_2E_3F` to be  $\lambda A_27a : \iota.(\lambda V0P \in (2^{A_27a}).(ap V0P (ap (c_2Emin_2E_40 A_27a) P)))$

**Definition 5** We define `c_2Ebool_2E_T` to be  $(ap (ap (c_2Emin_2E_3D (2^2)) (\lambda V0x \in 2.V0x)) (\lambda V1x \in 2.V1x))$

**Definition 6** We define `c_2Ebool_2E_21` to be  $\lambda A_27a : \iota.(\lambda V0P \in (2^{A_27a}).(ap (ap (c_2Emin_2E_3D (2^{A_27a}) P) (ap (c_2Emin_2E_3D A_27a) P)))))$

**Definition 7** We define `c_2Ebool_2E_2F_5C` to be  $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap (c_2Ebool_2E_21 2) (\lambda V2t \in 2.V2t))))$

Let `ty_2Eone_2Eone` :  $\iota$  be given. Assume the following.

$$nonempty\ ty\_2Eone\_2Eone \tag{1}$$

**Definition 8** We define `c_2Eone_2Eone` to be  $(ap (c_2Emin_2E_40 ty\_2Eone\_2Eone) (\lambda V0x \in ty\_2Eone\_2Eone))$

**Definition 9** We define `c_2Ebool_2E_3F_21` to be  $\lambda A_27a : \iota.(\lambda V0P \in (2^{A_27a}).(ap (ap c_2Ebool_2E_2F_5C (ap (c_2Emin_2E_3D A_27a) P) (ap (c_2Emin_2E_3D A_27a) P)))))$

Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0e \in A_27a.(p (ap (c_2Ebool_2E_3F_21 (A_27a\ ty\_2Eone\_2Eone)) (\lambda V1fn \in (A_27a\ ty\_2Eone\_2Eone)).(ap (ap (c_2Emin_2E_3D A_27a) (ap V1fn c_2Eone_2Eone)) V0e)))) \tag{2}$$

**Theorem 1**

$$\forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0e \in A_27a.(\exists V1fn \in (A_27a\ ty\_2Eone\_2Eone)).((ap V1fn c_2Eone_2Eone) = V0e)))$$