thm_2Efcp_2Efcp__ind (TMULUwS5djKP51f51ttE7Taj3LcwNCKTbjZ)

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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* ι.

Definition 2 *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 3 *We define* c_2Ebool_2ET *to be* $(ap\ (ap\ (\mathsf{c\_2Emin\_2E\_3D}\ (2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V$

Definition 4 *We define* c_2Ebool_2E_21 *to be* $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(ap\ (ap\ (\mathsf{c\_2Emin\_2E\_3D}\ (2^{A\_27}$

Definition 5 *We define* c_2Ebool_2EF *to be* $(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V0t \in 2.V0t))$.

Definition 6 *We define* c_2Ebool_2E_7E *to be* $(\lambda V0t \in 2.(ap\ (ap\ \mathsf{c\_2Emin\_2E\_3D\_3D\_3E}\ V0t)\ \mathsf{c\_2Ebool\_2EF}$

Let $ty\_2Efcp\_2Efinite\_\_image : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty\_2Efcp\_2Efinite\_\_image\ A0) \tag{1}$$

Let $ty\_2Efcp\_2Ecart : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow \forall A1.nonempty\ A1 \Rightarrow nonempty\ (ty\_2Efcp\_2Ecart\ A0\ A1) \tag{2}$$

Let $c\_2Efcp\_2Edest\_\_cart : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Efcp\_2Edest\_\_cart\ A\_27a\ A\_27b \in ((A\_27a^{(ty\_2Efcp\_2Efinite\_\_image\ A\_27b)})^{(ty\_2Efcp\_2Ecart\ A\_27a\ A\_27b)}) \tag{3}$$

Let $c\_2Efcp\_2Emk\_\_cart : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow c\_2Efcp\_2Emk\_\_cart\ A\_27a\ A\_27b \in ((ty\_2Efcp\_2Ecart\ A\_27a\ A\_27b)^{(A\_27a^{(ty\_2Efcp\_2Efinite\_\_image\ A\_27b)})}) \tag{4}$$

Definition 7 *We define* c_2Ebool_2E_2F_5C *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V2t \in 2$

Assume the following.

$$True \tag{5}$$

Assume the following.

$$(\forall V0t \in 2.(((True\Leftrightarrow(p\ V0t))\Leftrightarrow(p\ V0t))\wedge((((p\ V0t)\Leftrightarrow True)\Leftrightarrow (p\ V0t))\wedge(((False\Leftrightarrow(p\ V0t))\Leftrightarrow(\neg(p\ V0t)))\wedge(((p\ V0t)\Leftrightarrow False)\Leftrightarrow(\neg(p\ V0t))))))) \tag{6}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow\forall A\_27b.nonempty\ A\_27b\Rightarrow((\forall V0a \in (ty\_2Efcp\_2Ecart\ A\_27a\ A\_27b).((ap\ (c\_2Efcp\_2Emk\_\_cart\ A\_27a\ A\_27b)\ (ap\ (c\_2Efcp\_2Edest\_\_cart\ A\_27a\ A\_27b)\ V0a)) = V0a))\wedge (\forall V1r \in (A\_27a^{(ty\_2Efcp\_2Efinite\_\_image\ A\_27b)}).((p\ (ap\ (\lambda V2f \in (A\_27a^{(ty\_2Efcp\_2Efinite\_\_image\ A\_27b)}).\mathsf{c\_2Ebool\_2ET}) V1r))\Leftrightarrow((ap\ (c\_2Efcp\_2Edest\_\_cart\ A\_27a\ A\_27b)\ (ap\ (c\_2Efcp\_2Emk\_\_cart\ A\_27a\ A\_27b)\ V1r)) = V1r)))) \tag{7}$$

Theorem 1

$$\forall A\_27a.nonempty\ A\_27a\Rightarrow\forall A\_27b.nonempty\ A\_27b\Rightarrow(\forall V0P \in (2^{(ty\_2Efcp\_2Ecart\ A\_27a\ A\_27b)}).((\forall V1f \in (A\_27a^{(ty\_2Efcp\_2Efinite\_\_image\ A\_27b)}).(p\ (ap\ V0P\ (ap\ (c\_2Efcp\_2Emk\_\_cart\ A\_27a\ A\_27b)\ V1f))))\Rightarrow(\forall V2a \in (ty\_2Efcp\_2Ecart\ A\_27a\ A\_27b). (p\ (ap\ V0P\ V2a)))))$$