thm_2Egcd_2EGCD__ADD__R__THM (TMJk4RzjswWioqPuyaj5KVUxzrq9H5bQJ8E)

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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* $(ap\ (ap\ (\mathsf{c\_2Emin\_2E\_3D}\ (2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V1$

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

Definition 5 *We define* c_2Ebool_2E_2F_5C *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V2t \in 2$

Let $ty\_2Enum\_2Enum : \iota$ be given. Assume the following.

$$nonempty\ ty\_2Enum\_2Enum \tag{1}$$

Let $c\_2Earithmetic\_2E\_2B : \iota$ be given. Assume the following.

$$c\_2Earithmetic\_2E\_2B \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \tag{2}$$

Let $c\_2Egcd\_2Egcd : \iota$ be given. Assume the following.

$$c\_2Egcd\_2Egcd \in ((ty\_2Enum\_2Enum^{ty\_2Enum\_2Enum})^{ty\_2Enum\_2Enum}) \tag{3}$$

Assume the following.

$$(\forall V0m \in ty\_2Enum\_2Enum.(\forall V1n \in ty\_2Enum\_2Enum.(ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0m)\ V1n) = (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V1n)\ V0m)))) \tag{4}$$

Assume the following.

$$(\forall V0a \in ty\_2Enum\_2Enum.(\forall V1b \in ty\_2Enum\_2Enum.(ap\ (ap\ c\_2Egcd\_2Egcd\ V0a)\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0a)\ V1b)) = (ap\ (ap\ c\_2Egcd\_2Egcd\ V0a)\ V1b)))) \tag{5}$$

Theorem 1

$$((\forall V0a \in ty\_2Enum\_2Enum.(\forall V1b \in ty\_2Enum\_2Enum.$$
$$((ap\ (ap\ c\_2Egcd\_2Egcd\ V0a)\ (ap\ (ap\ c\_2Earithmetic\_2E\_2B\ V0a)\ V1b)) =$$
$$(ap\ (ap\ c\_2Egcd\_2Egcd\ V0a)\ V1b))))\wedge(\forall V2a \in ty\_2Enum\_2Enum.$$
$$(\forall V3b \in ty\_2Enum\_2Enum.((ap\ (ap\ c\_2Egcd\_2Egcd\ V2a)\ (ap\ ($$
$$ap\ c\_2Earithmetic\_2E\_2B\ V3b)\ V2a)) = (ap\ (ap\ c\_2Egcd\_2Egcd\ V2a)$$
$$V3b)))))$$