thm_2Earithmetic_2EODD__EVEN (TMVVdD-CZroU4pchGgmEkYs4kQKAL9CaBhbi)

October 26, 2020

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

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

Let $c\_2Earithmetic\_2EODD : \iota$ be given. Assume the following.

$$c\_2Earithmetic\_2EODD \in (2^{ty\_2Enum\_2Enum}) \tag{2}$$

Let $c\_2Earithmetic\_2EEVEN : \iota$ be given. Assume the following.

$$c\_2Earithmetic\_2EEVEN \in (2^{ty\_2Enum\_2Enum}) \tag{3}$$

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

Definition 3 *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 4 *We define* c_2Ebool_2EF *to be* $(ap \; (\mathsf{c\_2Ebool\_2E\_21} \; 2) \; (\lambda V0t \in 2.V0t))$.

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 ι.

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

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.

$$(\forall V0n \in ty\_2Enum\_2Enum.((p \; (ap \; c\_2Earithmetic\_2EEVEN \; V0n)) \Leftrightarrow \\ (\neg(p \; (ap \; c\_2Earithmetic\_2EODD \; V0n)))))) \tag{4}$$

Assume the following.

$$True \tag{5}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0t \in 2.((\forall V1x \in \\ A\_27a.(p\ V0t)) \Leftrightarrow (p\ V0t))) \tag{6}$$

Assume the following.

$$((\forall V0t \in 2.((\neg(\neg(p\ V0t))) \Leftrightarrow (p\ V0t))) \wedge (((\neg True) \Leftrightarrow False) \wedge \\ ((\neg False) \Leftrightarrow True))) \tag{7}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.((V0x = V0x) \Leftrightarrow \\ True)) \tag{8}$$

Theorem 1

$$(\forall V0n \in ty\_2Enum\_2Enum.((p\ (ap\ c\_2Earithmetic\_2EODD\ V0n)) \Leftrightarrow \\ (\neg(p\ (ap\ c\_2Earithmetic\_2EEVEN\ V0n)))))$$