

thm_2Eenumeral_2Edatatype__bt
(TMZxzyhQZpkncaz3BqxgyAa747XEByVrPyB)

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Let $ty_2Eenumeral_2Ebt : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty_2Eenumeral_2Ebt\ A0) \quad (1)$$

Let $c_2Eenumeral_2Enode : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A.27a.nonempty\ A.27a \Rightarrow c_2Eenumeral_2Enode\ A.27a \in (((ty_2Eenumeral_2Ebt\ A.27a)^{(ty_2Eenumeral_2Ebt\ A.27a)})^{A.27a})^{(ty_2Eenumeral_2Ebt\ A.27a)} \quad (2)$$

Let $c_2Eenumeral_2Ent : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A.27a.nonempty\ A.27a \Rightarrow c_2Eenumeral_2Ent\ A.27a \in (ty_2Eenumeral_2Ebt\ A.27a) \quad (3)$$

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 $(ap\ (ap\ (c_2Emin_2E_3D\ (2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V1x))$

Definition 3 We define $c_2Ebool_2EDATATYPE$ to be $\lambda A.27a : \iota.(\lambda V0x \in A.27a.c_2Ebool_2ET)$.

Definition 4 We define $c_2Ebool_2E_21$ to be $\lambda A.27a : \iota.(\lambda V0P \in (2^{A-27a}).(ap\ (ap\ (c_2Emin_2E_3D\ (2^{A-27a}))$

Assume the following.

$$True \quad (4)$$

Assume the following.

$$\forall A.27a.nonempty\ A.27a \Rightarrow (\forall V0x \in A.27a.((p\ (ap\ (c_2Ebool_2EDATATYPE\ A.27a)\ V0x)) \Leftrightarrow True)) \quad (5)$$

Theorem 1

$$\forall A.27a.nonempty\ A.27a \Rightarrow (\forall V0bt \in (((((ty_2Eenumeral_2Ebt\ A.27a)^{(ty_2Eenumeral_2Ebt\ A.27a)})^{A.27a})^{(ty_2Eenumeral_2Ebt\ A.27a)})^{A.27a})^{(ty_2Eenumeral_2Ebt\ A.27a)})\ (p\ (ap\ (c_2Ebool_2EDATATYPE\ 2)\ (ap\ (ap\ V0bt\ (c_2Eenumeral_2Enode\ A.27a))\ (c_2Eenumeral_2Enode\ A.27a))))$$