thm_2Ebit_2EBITS__THM (TMbC2iSjb2NnQhNYrjCB5zh9ru7P7RC8poM)

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Let $ty_2Enum_2Enum : \iota$ be given. Assume the following.

$$nonempty\ ty_2Enum_2Enum \tag{1}$$

Let $c_2Earithmetic_2EMOD : \iota$ be given. Assume the following.

$$c_2Earithmetic_2EMOD \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum}) \tag{2}$$

Let $c_2Enum_2EZERO__REP : \iota$ be given. Assume the following.

$$c_2Enum_2EZERO__REP \in omega \tag{3}$$

Let $c_2Enum_2EABS__num : \iota$ be given. Assume the following.

$$c_2Enum_2EABS__num \in (ty_2Enum_2Enum^{omega}) \tag{4}$$

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_2Enum_2E0 *to be* $(ap\ c_2Enum_2EABS__num\ c_2Enum_2EZERO__REP)$.

Definition 3 *We define* c_2Earithmetic_2EZERO *to be* c_2Enum_2E0.

Let $c_2Enum_2EREP__num : \iota$ be given. Assume the following.

$$c_2Enum_2EREP__num \in (omega^{ty_2Enum_2Enum}) \tag{5}$$

Let $c_2Enum_2ESUC__REP : \iota$ be given. Assume the following.

$$c_2Enum_2ESUC__REP \in (omega^{omega}) \tag{6}$$

Definition 4 *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 5 *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 6 *We define* c_2Enum_2ESUC *to be* $\lambda V0m \in ty_2Enum_2Enum.(ap\ c_2Enum_2EABS__num\ ($

Let $c_2Earithmetic_2E_2B : \iota$ be given. Assume the following.

$$c_2Earithmetic_2E_2B \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum}) \tag{7}$$

Definition 7 *We define* c_2Earithmetic_2EBIT2 *to be* $\lambda V0n \in ty_2Enum_2Enum.(ap\ (ap\ c_2Earithmetic_$

Definition 8 *We define* c_2Earithmetic_2ENUMERAL *to be* $\lambda V0x \in ty_2Enum_2Enum.V0x.$

Let $c_2Earithmetic_2EEXP : \iota$ be given. Assume the following.

$$c_2Earithmetic_2EEXP \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum}) \tag{8}$$

Let $c_2Earithmetic_2EDIV : \iota$ be given. Assume the following.

$$c_2Earithmetic_2EDIV \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum}) \tag{9}$$

Definition 9 *We define* c_2Ebit_2EDIV__2EXP *to be* $\lambda V0x \in ty_2Enum_2Enum.\lambda V1n \in ty_2Enum_2Enu$

Let $c_2Earithmetic_2E_2D : \iota$ be given. Assume the following.

$$c_2Earithmetic_2E_2D \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum}) \tag{10}$$

Definition 10 *We define* c_2Ebit_2EMOD__2EXP *to be* $\lambda V0x \in ty_2Enum_2Enum.\lambda V1n \in ty_2Enum_2E$

Definition 11 *We define* c_2Ebit_2EBITS *to be* $\lambda V0h \in ty_2Enum_2Enum.\lambda V1l \in ty_2Enum_2Enum.\lambda V$

Theorem 1

$$\begin{gathered}(\forall V0h \in ty_2Enum_2Enum.(\forall V1l \in ty_2Enum_2Enum.(\\ \forall V2n \in ty_2Enum_2Enum.((ap\ (ap\ (ap\ \mathsf{c_2Ebit_2EBITS}\ V0h)\ V1l)\\ V2n) = (ap\ (ap\ c_2Earithmetic_2EMOD\ (ap\ (ap\ c_2Earithmetic_2EDIV\\ V2n)\ (ap\ (ap\ c_2Earithmetic_2EEXP\ (ap\ \mathsf{c_2Earithmetic_2ENUMERAL}\\ (ap\ \mathsf{c_2Earithmetic_2EBIT2}\ \mathsf{c_2Earithmetic_2EZERO})))\ V1l))) (\\ ap\ (ap\ c_2Earithmetic_2EEXP\ (ap\ \mathsf{c_2Earithmetic_2ENUMERAL}\ (ap\\ \mathsf{c_2Earithmetic_2EBIT2}\ \mathsf{c_2Earithmetic_2EZERO})))\ (ap\ (ap\ c_2Earithmetic_2E_2D\\ (ap\ \mathsf{c_2Enum_2ESUC}\ V0h))\ V1l)))))))\end{gathered}$$