

thm_2Ebitstring_2Eshiftr__0 (TM-
MmNk8hVcXgnFLhZFz3CYFbP7bSe69XTEj)

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Let $c_2Enum_2EZERO_REP : \iota$ be given. Assume the following.

$$c_2Enum_2EZERO_REP \in \omega \tag{1}$$

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

$$nonempty\ ty_2Enum_2Enum \tag{2}$$

Let $c_2Enum_2EABS_num : \iota$ be given. Assume the following.

$$c_2Enum_2EABS_num \in (ty_2Enum_2Enum^{\omega}) \tag{3}$$

Definition 1 We define c_2Emin_2E3D 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 $(ap\ c_2Enum_2EABS_num\ c_2Enum_2EZERO_REP)$.

Let $c_2Earithmetic_2E2D : \iota$ be given. Assume the following.

$$c_2Earithmetic_2E2D \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum}) \tag{4}$$

Let $ty_2Elist_2Elist : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty_2Elist_2Elist\ A0) \tag{5}$$

Let $c_2Elist_2ELENGTH : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A.27a.nonempty\ A.27a \Rightarrow c_2Elist_2ELENGTH\ A.27a \in (ty_2Enum_2Enum^{(ty_2Elist_2Elist\ A.27a)}) \tag{6}$$

Let $c_2Elist_2ETAKE : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A.27a.nonempty\ A.27a \Rightarrow c_2Elist_2ETAKE\ A.27a \in (((ty_2Elist_2Elist\ A.27a)^{(ty_2Elist_2Elist\ A.27a)})^{ty_2Enum_2Enum}) \tag{7}$$

Definition 3 We define c_2Ebool_2ET to be $(ap\ (ap\ (c_2Emin_2E3D\ (2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V1x))$

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

Definition 5 We define `c_2Ebitstring_2Eshiftr` to be $\lambda V0v \in (ty_2Elist_2Elist\ 2). \lambda V1m \in ty_2Enum_2Enum$

Definition 6 We define `c_2Ebool_2E_2F` to be $(ap (c_2Ebool_2E_21\ 2) (\lambda V0t \in 2.V0t))$.

Definition 7 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 8 We define `c_2Ebool_2E_7E` to be $(\lambda V0t \in 2. (ap (ap\ c_2Emin_2E_3D_3D_3E\ V0t)\ c_2Ebool_2E_2F$

Definition 9 We define `c_2Ebool_2E_2F_5C` to be $(\lambda V0t1 \in 2. (\lambda V1t2 \in 2. (ap (c_2Ebool_2E_21\ 2) (\lambda V2t \in 2$

Assume the following.

$$\begin{aligned} (\forall V0m \in ty_2Enum_2Enum. (((ap (ap\ c_2Earithmetic_2E_2D \\ c_2Enum_2E0)\ V0m) = c_2Enum_2E0) \wedge ((ap (ap\ c_2Earithmetic_2E_2D \\ V0m)\ c_2Enum_2E0) = V0m))) \end{aligned} \quad (8)$$

Assume the following.

$$True \quad (9)$$

Assume the following.

$$\begin{aligned} (\forall V0t \in 2. (((True \Leftrightarrow (p\ V0t)) \Leftrightarrow (p\ V0t)) \wedge (((p\ V0t) \Leftrightarrow True) \Leftrightarrow \\ (p\ V0t)) \wedge (((False \Leftrightarrow (p\ V0t)) \Leftrightarrow \neg(p\ V0t)) \wedge (((p\ V0t) \Leftrightarrow False) \Leftrightarrow \neg(\\ p\ V0t)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} \forall A_{27a}. nonempty\ A_{27a} \Rightarrow (\forall V0l \in (ty_2Elist_2Elist \\ A_{27a}). ((ap (ap (c_2Elist_2ETAKE\ A_{27a}) (ap (c_2Elist_2ELENGTH \\ A_{27a})\ V0l))\ V0l) = V0l)) \end{aligned} \quad (11)$$

Theorem 1

$$(\forall V0v \in (ty_2Elist_2Elist\ 2). ((ap (ap\ c_2Ebitstring_2Eshiftr\ V0v)\ c_2Enum_2E0) = V0v))$$