

thm_2Ewords_2EROR__CYCLE (TM- PxZRwP28vTsJYVNZ9ibswqV35ahmmEjsC)

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

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

Let $c_2Earithmetic_2E_2A : \iota$ be given. Assume the following.

$$c_2Earithmetic_2E_2A \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum}) \tag{2}$$

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 $c_2Ebool_2E_2T$ to be $(ap (ap (c_2Emin_2E_3D (2^2)) (\lambda V0x \in 2.V0x)) (\lambda V1x \in 2.V1x))$

Definition 3 We define $c_2Ebool_2E_21$ to be $\lambda A_27a : \iota.(\lambda V0P \in (2^{A-27a}).(ap (ap (c_2Emin_2E_3D (2^{A-27a}))$

Definition 4 We define $c_2Ebool_2E_2F$ to be $(ap (c_2Ebool_2E_21 2) (\lambda V0t \in 2.V0t))$.

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 $c_2Ebool_2E_27E$ to be $(\lambda V0t \in 2.(ap (ap c_2Emin_2E_3D_3D_3E V0t) c_2Ebool_2E_2F$

Definition 7 We define $c_2Ebool_2E_2F_5C$ to be $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap (c_2Ebool_2E_21 2) (\lambda V2t \in 2.V2t))$

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

$$c_2Earithmetic_2E_2B \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum}) \tag{3}$$

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

$$c_2Earithmetic_2EMOD \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum}) \tag{4}$$

Let $ty_2EfcP_2Efinite_image : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty_2EfcP_2Efinite_image\ A0) \tag{5}$$

Definition 15 We define c_2EfcP_2EFCP to be $\lambda A_27a : \iota.\lambda A_27b : \iota.(\lambda V0g \in (A_27a^{ty_2Enum_2Enum}).(ap$

Definition 16 We define $c_2Ewords_2Eword_ror$ to be $\lambda A_27a : \iota.\lambda V0w \in (ty_2EfcP_2Ecart\ 2\ A_27a).\lambda V1$

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

$$c_2Enum_2EZERO_REP \in \omega \tag{14}$$

Definition 17 We define c_2Enum_2E0 to be $(ap\ c_2Enum_2EABS_num\ c_2Enum_2EZERO_REP)$.

Assume the following.

$$\begin{aligned} & (\forall V0m \in ty_2Enum_2Enum. (\forall V1n \in ty_2Enum_2Enum. (\\ & (ap\ (ap\ c_2Earithmetic_2E_2B\ V0m)\ V1n) = (ap\ (ap\ c_2Earithmetic_2E_2B \\ & \quad V1n)\ V0m)))) \end{aligned} \tag{15}$$

Assume the following.

$$\begin{aligned} & (\forall V0n \in ty_2Enum_2Enum. (\forall V1k \in ty_2Enum_2Enum. (\\ & (p\ (ap\ (ap\ c_2Eprim_rec_2E_3C\ V1k)\ V0n)) \Rightarrow ((ap\ (ap\ c_2Earithmetic_2EMOD \\ & \quad V1k)\ V0n) = V1k)))) \end{aligned} \tag{16}$$

Assume the following.

$$\begin{aligned} & (\forall V0n \in ty_2Enum_2Enum. ((p\ (ap\ (ap\ c_2Eprim_rec_2E_3C \\ & \quad c_2Enum_2E0)\ V0n)) \Rightarrow (\forall V1q \in ty_2Enum_2Enum. (\forall V2r \in \\ & \quad ty_2Enum_2Enum. ((ap\ (ap\ c_2Earithmetic_2EMOD\ (ap\ (ap\ c_2Earithmetic_2E_2B \\ & \quad (ap\ (ap\ c_2Earithmetic_2E_2A\ V1q)\ V0n))\ V2r))\ V0n) = (ap\ (ap\ c_2Earithmetic_2EMOD \\ & \quad V2r)\ V0n)))))) \end{aligned} \tag{17}$$

Assume the following.

$$True \tag{18}$$

Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0x \in A_27a. ((V0x = V0x) \Leftrightarrow True)) \tag{19}$$

Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0x \in A_27a. (\forall V1y \in A_27a. ((V0x = V1y) \Leftrightarrow (V1y = V0x)))) \tag{20}$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2. (((True \Leftrightarrow (p\ V0t)) \Leftrightarrow (p\ V0t)) \wedge (((p\ V0t) \Leftrightarrow True) \Leftrightarrow \\ & (p\ V0t)) \wedge (((False \Leftrightarrow (p\ V0t)) \Leftrightarrow \neg(p\ V0t)) \wedge (((p\ V0t) \Leftrightarrow False) \Leftrightarrow \neg(\\ & \quad p\ V0t)))))) \end{aligned} \tag{21}$$

Assume the following.

$$(\forall V0t1 \in 2.(\forall V1t2 \in 2.(\forall V2t3 \in 2.(((p V0t1) \Rightarrow (p V1t2) \Rightarrow (p V2t3)) \Leftrightarrow (((p V0t1) \wedge (p V1t2)) \Rightarrow (p V2t3)))))) \quad (22)$$

Assume the following.

$$(\forall V0x \in 2.(\forall V1x_{.27} \in 2.(\forall V2y \in 2.(\forall V3y_{.27} \in 2.(((p V0x) \Leftrightarrow (p V1x_{.27})) \wedge ((p V1x_{.27}) \Rightarrow ((p V2y) \Leftrightarrow (p V3y_{.27})))))) \Rightarrow ((p V0x) \Rightarrow (p V2y)) \Leftrightarrow ((p V1x_{.27}) \Rightarrow (p V3y_{.27})))))) \quad (23)$$

Assume the following.

$$\forall A_{.27a}.nonempty A_{.27a} \Rightarrow \forall A_{.27b}.nonempty A_{.27b} \Rightarrow (\forall V0x \in (ty_2EfcP_2Ecart A_{.27a} A_{.27b}).(\forall V1y \in (ty_2EfcP_2Ecart A_{.27a} A_{.27b}).((V0x = V1y) \Leftrightarrow (\forall V2i \in ty_2Enum_2Enum.((p (ap (ap c_2Eprim_rec_2E_3C V2i) (ap (c_2EfcP_2Edimindex A_{.27b}) (c_2Ebool_2Ethe_value A_{.27b})))) \Rightarrow ((ap (ap (c_2EfcP_2EfcP_index A_{.27a} A_{.27b}) V0x) V2i) = (ap (ap (c_2EfcP_2EfcP_index A_{.27a} A_{.27b}) V1y) V2i))))))) \quad (24)$$

Assume the following.

$$\forall A_{.27a}.nonempty A_{.27a} \Rightarrow \forall A_{.27b}.nonempty A_{.27b} \Rightarrow (\forall V0g \in (A_{.27a}^{ty_2Enum_2Enum}).(\forall V1i \in ty_2Enum_2Enum.((p (ap (ap (ap c_2Eprim_rec_2E_3C V1i) (ap (c_2EfcP_2Edimindex A_{.27b}) (c_2Ebool_2Ethe_value A_{.27b})))) \Rightarrow ((ap (ap (c_2EfcP_2EfcP_index A_{.27a} A_{.27b}) (ap (c_2EfcP_2EFCP A_{.27a} A_{.27b}) V0g)) V1i) = (ap V0g V1i)))))) \quad (25)$$

Assume the following.

$$\forall A_{.27a}.nonempty A_{.27a} \Rightarrow (p (ap (ap c_2Eprim_rec_2E_3C c_2Enum_2E0) (ap (c_2EfcP_2Edimindex A_{.27a}) (c_2Ebool_2Ethe_value A_{.27a})))) \quad (26)$$

Theorem 1

$$\forall A_{.27a}.nonempty A_{.27a} \Rightarrow (\forall V0w \in (ty_2EfcP_2Ecart 2 A_{.27a}).(\forall V1n \in ty_2Enum_2Enum.((ap (ap (c_2Ewords_2Eword_ror A_{.27a}) V0w) (ap (ap c_2Earithmetic_2E_2A V1n) (ap (c_2EfcP_2Edimindex A_{.27a}) (c_2Ebool_2Ethe_value A_{.27a})))) = V0w)))$$