

thm_2Ecanonical_2Edatatype__canonical__sum
(TMbT5i7SY3V9o6T24xeNxzeWXYZ42kCVYsB)

October 26, 2020

Let $ty_2Ecanonical_2Ecanonical_sum : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty_2Ecanonical_2Ecanonical_sum\ A0) \quad (1)$$

Let $ty_2Equote_2Eindex : \iota$ be given. Assume the following.

$$nonempty\ ty_2Equote_2Eindex \quad (2)$$

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

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty_2Elist_2Elist\ A0) \quad (3)$$

Let $c_2Ecanonical_2ECons_varlist : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow c_2Ecanonical_2ECons_varlist\ A_27a \in (((ty_2Ecanonical_2Ecanonical_sum\ A_27a)^{(ty_2Ecanonical_2Ecanonical_sum\ A_27a)})^{(ty_2Elist_2Elist\ ty_2Equote_2Eindex\ A_27a)}) \quad (4)$$

Let $c_2Ecanonical_2ECons_monom : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow c_2Ecanonical_2ECons_monom\ A_27a \in (((ty_2Ecanonical_2Ecanonical_sum\ A_27a)^{(ty_2Ecanonical_2Ecanonical_sum\ A_27a)})^{(ty_2Elist_2Elist\ ty_2Equote_2Eindex\ A_27a)}) \quad (5)$$

Let $c_2Ecanonical_2ENil_monom : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow c_2Ecanonical_2ENil_monom\ A_27a \in (ty_2Ecanonical_2Ecanonical_sum\ A_27a) \quad (6)$$

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_2Ebool_2ET to be $(ap\ (ap\ (c_2Emin_2E3D\ (2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V1x))$

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.

$$True \tag{7}$$

Assume the following.

$$\forall A_{27a}. nonempty A_{27a} \Rightarrow (\forall V0x \in A_{27a}. ((p (ap (c_2Ebool_2EDATATYPE A_{27a}) V0x)) \Leftrightarrow True)) \tag{8}$$

Theorem 1

$$2(((ty_2Ecanonical_2Ecanonical_sum A_{27a})^{(ty_2Ecanonical_2Ecanonical_sum A_{27a})} (ty_2Elist_2Elist ty_2Equote_2Eindex))^{(\forall A_{27a}. (p (ap (c_2Ebool_2EDATATYPE A_{27a}) (c_2Ecanonical_2Ecanonical_sum A_{27a})) (c_2Ecanonical_2Ecanonical_sum A_{27a})) (ty_2Elist_2Elist ty_2Equote_2Eindex))}))$$