

thm_2Eiterate_2ENSUM_CASES

(TM YosstBms2pzhircKd6hjAEQUWVJgM5iB6)

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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 $c_2Ebool_2E_2IN$ to be $\lambda A_27a : \iota.(\lambda V0x \in A_27a.(\lambda V1f \in (2^{A_27a}).(ap V1f V0x)))$

Definition 8 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 $ty_2Epair_2Eprod : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty A0 \Rightarrow \forall A1.nonempty A1 \Rightarrow nonempty (ty_2Epair_2Eprod A0 A1) \tag{1}$$

Let $c_2Epair_2EABS_prod : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty A_27a \Rightarrow \forall A_27b.nonempty A_27b \Rightarrow c_2Epair_2EABS_prod A_27a A_27b \in ((ty_2Epair_2Eprod A_27a A_27b)^{(2^{A_27b})^{A_27a}}) \tag{2}$$

Definition 9 We define $c_2Epair_2E_2C$ to be $\lambda A_27a : \iota.\lambda A_27b : \iota.\lambda V0x \in A_27a.\lambda V1y \in A_27b.(ap (c_2E$

Let $c_2Epred_set_2EGSPEC : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty A_27a \Rightarrow \forall A_27b.nonempty A_27b \Rightarrow c_2Epred_set_2EGSPEC A_27a A_27b \in ((2^{A_27a})^{(ty_2Epair_2Eprod A_27a 2)^{A_27b}}) \tag{3}$$

Definition 10 We define c_2Emin_2E40 to be $\lambda A.\lambda P \in 2^A.$ **if** $(\exists x \in A.p (ap P x))$ **then** (the $(\lambda x.x \in A \wedge p x)$ of type $\iota \Rightarrow \iota$).

Definition 11 We define c_2Ebool_2ECOND to be $\lambda A.\lambda V0t \in 2.(\lambda V1t1 \in A.\lambda V2t2 \in A.\lambda V3t3 \in A.2)$

Definition 12 We define $c_2Ebool_2E5C_2E2F$ to be $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap (c_2Ebool_2E21) 2) (\lambda V2t \in 2.2)))$

Definition 13 We define $c_2Epred_set_2EINSERT$ to be $\lambda A.\lambda V0x \in A.\lambda V1s \in (2^{A-27a}).(ap (c_2Ebool_2E21) (\lambda V2t \in 2.2)))$

Definition 14 We define $c_2Epred_set_2EEMPTY$ to be $\lambda A.\lambda V0x \in A.\lambda V1s \in (2^{A-27a}).(ap (c_2Ebool_2E21) (\lambda V2t \in 2.2)))$

Definition 15 We define $c_2Epred_set_2EFINITE$ to be $\lambda A.\lambda V0s \in (2^{A-27a}).(ap (c_2Ebool_2E21) (\lambda V1t \in 2.2)))$

Definition 16 We define $c_2Eiterate_2Eneutral$ to be $\lambda A.\lambda V0op \in ((A-27a)^{A-27a}).(ap (c_2Emin_2E40) (\lambda V1x \in A.\lambda V2y \in A.2))$

Definition 17 We define $c_2Eiterate_2Esupport$ to be $\lambda A.\lambda V0op \in ((A-27b)^{A-27b}).(ap (c_2Emin_2E40) (\lambda V1x \in A.\lambda V2y \in A.2))$

Definition 18 We define $c_2Eiterate_2EITSET$ to be $\lambda A.\lambda V0f \in ((A-27a)^{A-27a}).(ap (c_2Emin_2E40) (\lambda V1x \in A.\lambda V2y \in A.2))$

Definition 19 We define $c_2Eiterate_2Eiterate$ to be $\lambda A.\lambda V0op \in ((A-27b)^{A-27b}).(ap (c_2Emin_2E40) (\lambda V1x \in A.\lambda V2y \in A.2))$

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

$$nonempty\ ty_2Enum_2Enum \tag{4}$$

Let $c_2Earithmetic_2E2B : \iota$ be given. Assume the following.

$$c_2Earithmetic_2E2B \in ((ty_2Enum_2Enum^{ty_2Enum_2Enum})^{ty_2Enum_2Enum}) \tag{5}$$

Definition 20 We define $c_2Eiterate_2Eensum$ to be $\lambda A.\lambda V0op \in ((A-27a)^{A-27a}).(ap (ap (c_2Eiterate_2Eiterate) A.\lambda V1x \in A.\lambda V2y \in A.2))$

Definition 21 We define $c_2Eiterate_2Emonoidal$ to be $\lambda A.\lambda V0op \in ((A-27a)^{A-27a}).(ap (ap (c_2Eiterate_2Eiterate) A.\lambda V1x \in A.\lambda V2y \in A.2))$

Assume the following.

$$True \tag{6}$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2.(((True \Leftrightarrow (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \Leftrightarrow True) \Leftrightarrow \\ & (p V0t)) \wedge (((False \Leftrightarrow (p V0t)) \Leftrightarrow \neg(p V0t)) \wedge (((p V0t) \Leftrightarrow False) \Leftrightarrow \neg(\\ & p V0t)))))) \end{aligned} \tag{7}$$

