

thm_2Estring_2EEXPLODE__IMPLODE (TMc- CLW8vWA6CoznSytwf82eETP65umwcD2F)

October 26, 2020

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

Let $ty_2Estring_2Echar : \iota$ be given. Assume the following.

$$nonempty\ ty_2Estring_2Echar \tag{1}$$

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

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty_2Elist_2Elist\ A0) \tag{2}$$

Let $c_2Estring_2EIMPLODE : \iota$ be given. Assume the following.

$$c_2Estring_2EIMPLODE \in ((ty_2Elist_2Elist\ ty_2Estring_2Echar)^{(ty_2Elist_2Elist\ ty_2Estring_2Echar)}) \tag{3}$$

Let $c_2Elist_2ECONS : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow c_2Elist_2ECONS\ A_27a \in (((ty_2Elist_2Elist\ A_27a)^{(ty_2Elist_2Elist\ A_27a)})^{A_27a}) \tag{4}$$

Let $c_2Elist_2ENIL : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow c_2Elist_2ENIL\ A_27a \in (ty_2Elist_2Elist\ A_27a) \tag{5}$$

Let $c_2Estring_2EEXPLODE : \iota$ be given. Assume the following.

$$c_2Estring_2EEXPLODE \in ((ty_2Elist_2Elist\ ty_2Estring_2Echar)^{(ty_2Elist_2Elist\ ty_2Estring_2Echar)}) \tag{6}$$

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

Assume the following.

$$True \tag{7}$$

Assume the following.

$$\begin{aligned} & (\forall V0t \in 2.(((True \wedge (p V0t)) \Leftrightarrow (p V0t)) \wedge (((p V0t) \wedge True) \Leftrightarrow \\ & (p V0t)) \wedge (((False \wedge (p V0t)) \Leftrightarrow False) \wedge (((p V0t) \wedge False) \Leftrightarrow False) \wedge \\ & (((p V0t) \wedge (p V0t)) \Leftrightarrow (p V0t)))))) \end{aligned} \tag{8}$$

Assume the following.

$$\forall A_27a.nonempty A_27a \Rightarrow (\forall V0x \in A_27a.((V0x = V0x) \Leftrightarrow True)) \tag{9}$$

Assume the following.

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

Assume the following.

$$\begin{aligned} & \forall A_27a.nonempty A_27a \Rightarrow (\forall V0P \in (2^{(ty_2Elist_2Elist A_27a)}). \\ & (((p (ap V0P (c_2Elist_2ENIL A_27a))) \wedge (\forall V1t \in (ty_2Elist_2Elist \\ & A_27a).((p (ap V0P V1t)) \Rightarrow (\forall V2h \in A_27a.(p (ap V0P (ap (ap (\\ & c_2Elist_2ECONS A_27a) V2h) V1t)))))) \Rightarrow (\forall V3l \in (ty_2Elist_2Elist \\ & A_27a).(p (ap V0P V3l)))))) \end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned} & \forall A_27a.nonempty A_27a \Rightarrow (\forall V0a0 \in A_27a.(\forall V1a1 \in \\ & (ty_2Elist_2Elist A_27a).(\forall V2a0_27 \in A_27a.(\forall V3a1_27 \in \\ & (ty_2Elist_2Elist A_27a).(((ap (ap (c_2Elist_2ECONS A_27a) V0a0) \\ & V1a1) = (ap (ap (c_2Elist_2ECONS A_27a) V2a0_27) V3a1_27)) \Leftrightarrow ((V0a0 = \\ & V2a0_27) \wedge (V1a1 = V3a1_27)))))) \end{aligned} \tag{12}$$

Assume the following.

$$\begin{aligned} & (((ap c_2Estring_2EIMPL0DE (c_2Elist_2ENIL ty_2Estring_2Echar)) = \\ & (c_2Elist_2ENIL ty_2Estring_2Echar)) \wedge (\forall V0c \in ty_2Estring_2Echar. \\ & (\forall V1cs \in (ty_2Elist_2Elist ty_2Estring_2Echar).((ap c_2Estring_2EIMPL0DE \\ & (ap (ap (c_2Elist_2ECONS ty_2Estring_2Echar) V0c) V1cs)) = (ap \\ & (ap (c_2Elist_2ECONS ty_2Estring_2Echar) V0c) (ap c_2Estring_2EIMPL0DE \\ & V1cs)))))) \end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& (((ap\ c_2Estring_2EEXPLODE\ (c_2Elist_2ENIL\ ty_2Estring_2Echar)) = \\
& \quad (c_2Elist_2ENIL\ ty_2Estring_2Echar)) \wedge (\forall V0c \in ty_2Estring_2Echar. \\
& (\forall V1s \in (ty_2Elist_2Elist\ ty_2Estring_2Echar). ((ap\ c_2Estring_2EEXPLODE \\
& \quad (ap\ (ap\ (c_2Elist_2ECONS\ ty_2Estring_2Echar)\ V0c)\ V1s)) = (ap\ (\\
& \quad ap\ (c_2Elist_2ECONS\ ty_2Estring_2Echar)\ V0c)\ (ap\ c_2Estring_2EEXPLODE \\
& \quad \quad V1s))))))
\end{aligned}
\tag{14}$$

Theorem 1

$$\begin{aligned}
& (\forall V0cs \in (ty_2Elist_2Elist\ ty_2Estring_2Echar). ((ap\ c_2Estring_2EEXPLODE \\
& \quad (ap\ c_2Estring_2EIMPLODE\ V0cs)) = V0cs))
\end{aligned}$$