

thm_2Estring_2EEXPLODE_EQNS
(TMJh3HH42FCrpQHWqsXv8soG8GomiVPtZTR)

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

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty_2Elist_2Elist\ A0) \quad (1)$$

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

$$\forall A.27a.nonempty\ A.27a \Rightarrow c_2Elist_2ECONS\ A.27a \in (((ty_2Elist_2Elist\ A.27a)^{(ty_2Elist_2Elist\ A.27a)})^{A.27a}) \quad (2)$$

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_2E21 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_2E21 to be $\lambda A.27a : \iota.(\lambda V0P \in (2^{A-27a}).(ap\ (ap\ (c_2Emin_2E3D\ (2^{A-27a}))\ P))\ V0P))$

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

$$\forall A.27a.nonempty\ A.27a \Rightarrow c_2Elist_2ENIL\ A.27a \in (ty_2Elist_2Elist\ A.27a) \quad (3)$$

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

$$nonempty\ ty_2Estring_2Echar \quad (4)$$

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

$$c_2Estring_2EEXPLODE \in ((ty_2Elist_2Elist\ ty_2Estring_2Echar)^{(ty_2Elist_2Elist\ ty_2Estring_2Echar)}) \quad (5)$$

Definition 4 We define $c_2Emin_2E3D_3D_3E$ to be $\lambda P \in 2.\lambda Q \in 2.inj_o\ (p\ P \Rightarrow p\ Q)$ of type ι .

Definition 5 We define $c_2Ebool_2E2F_5C$ to be $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ (c_2Ebool_2E21\ 2)\ t2))\ V0t1)$

Assume the following.

$$\begin{aligned}
& (((ap\ c_2Estring_2EEXPLODE\ (c_2Elist_2ENIL\ ty_2Estring_2Echar)) = \\
& \quad (c_2Elist_2ENIL\ ty_2Estring_2Echar)) \wedge (\forall V0c \in ty_2Estring_2Echar. \\
& (\forall V1s \in (ty_2Elist_2Elist\ ty_2Estring_2Echar). ((ap\ c_2Estring_2EEXPLODE \\
& \quad (ap\ (ap\ (c_2Elist_2ECONS\ ty_2Estring_2Echar)\ V0c)\ V1s)) = (ap\ (\\
& \quad ap\ (c_2Elist_2ECONS\ ty_2Estring_2Echar)\ V0c)\ (ap\ c_2Estring_2EEXPLODE \\
& \quad \quad V1s))))))
\end{aligned} \tag{6}$$

Theorem 1

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