

thm_2Ecomparison_2Echar__cmp__charOrd
(TMPN-
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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 $c_2Ebool_2E_ET$ to be $(ap (ap (c_2Emin_2E_3D (2^2)) (\lambda V0x \in 2.V0x)) (\lambda V1x \in 2.V1x))$.
Let $ty_2Eenum_2E_enum : \iota$ be given. Assume the following.

$$nonempty\ ty_2Eenum_2E_enum \tag{1}$$

Let $ty_2Estring_2E_char : \iota$ be given. Assume the following.

$$nonempty\ ty_2Estring_2E_char \tag{2}$$

Let $c_2Estring_2E_ORD : \iota$ be given. Assume the following.

$$c_2Estring_2E_ORD \in (ty_2Eenum_2E_enum)^{ty_2Estring_2E_char} \tag{3}$$

Let $ty_2EternaryComparisons_2E_ordering : \iota$ be given. Assume the following.

$$nonempty\ ty_2EternaryComparisons_2E_ordering \tag{4}$$

Let $c_2EternaryComparisons_2E_GREATER : \iota$ be given. Assume the following.

$$c_2EternaryComparisons_2E_GREATER \in ty_2EternaryComparisons_2E_ordering \tag{5}$$

Let $c_2EternaryComparisons_2E_LESS : \iota$ be given. Assume the following.

$$c_2EternaryComparisons_2E_LESS \in ty_2EternaryComparisons_2E_ordering \tag{6}$$

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

Definition 4 We define $c_2Ebool_2E_EF$ to be $(ap (c_2Ebool_2E_21 2) (\lambda V0t \in 2.V0t))$.

Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0x \in A_27a. ((V0x = V0x) \Leftrightarrow True)) \quad (13)$$

Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow \forall A_27b.nonempty\ A_27b \Rightarrow (\forall V0f \in (A_27b^{A_27a}). (\forall V1g \in (A_27b^{A_27a}). ((V0f = V1g) \Leftrightarrow (\forall V2x \in A_27a. ((ap\ V0f\ V2x) = (ap\ V1g\ V2x)))))) \quad (14)$$

Assume the following.

$$(\forall V0c1 \in ty_2Estring_2Echar. (\forall V1c2 \in ty_2Estring_2Echar. ((ap\ (ap\ c_2EternaryComparisons_2Echar_compare\ V0c1)\ V1c2) = (ap\ (ap\ c_2EternaryComparisons_2Enum_compare\ (ap\ c_2Estring_2EORD\ V0c1))\ (ap\ c_2Estring_2EORD\ V1c2)))))) \quad (15)$$

Assume the following.

$$(c_2EternaryComparisons_2Enum_compare = c_2Etoto_2EnumOrd) \quad (16)$$

Theorem 1 $(c_2EternaryComparisons_2Echar_compare = c_2Etoto_2EcharOrd)$.