thm_2Ebinary__ieee_2Edatatype__float__compare (TMHdfyBzkpwhX-Hia1xpeiUNehHKUSH7QaLp)

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Let $ty\_2Ebinary\_\_ieee\_2Efloat\_\_compare : \iota$ be given. Assume the following.

$$nonempty\ ty\_2Ebinary\_\_ieee\_2Efloat\_\_compare \tag{1}$$

Let $c\_2Ebinary\_\_ieee\_2EUN : \iota$ be given. Assume the following.

$$c\_2Ebinary\_\_ieee\_2EUN \in ty\_2Ebinary\_\_ieee\_2Efloat\_\_compare \tag{2}$$

Let $c\_2Ebinary\_\_ieee\_2EGT : \iota$ be given. Assume the following.

$$c\_2Ebinary\_\_ieee\_2EGT \in ty\_2Ebinary\_\_ieee\_2Efloat\_\_compare \tag{3}$$

Let $c\_2Ebinary\_\_ieee\_2EEQ : \iota$ be given. Assume the following.

$$c\_2Ebinary\_\_ieee\_2EEQ \in ty\_2Ebinary\_\_ieee\_2Efloat\_\_compare \tag{4}$$

Let $c\_2Ebinary\_\_ieee\_2ELT : \iota$ be given. Assume the following.

$$c\_2Ebinary\_\_ieee\_2ELT \in ty\_2Ebinary\_\_ieee\_2Efloat\_\_compare \tag{5}$$

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_2ET *to be* $(ap\ (ap\ (\text{c\_2Emin\_2E\_3D}\ (2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V1$

Definition 3 *We define* c_2Ebool_2EDATATYPE *to be* $\lambda A\_27a : \iota.(\lambda V0x \in A\_27a.\text{c\_2Ebool\_2ET})$.

Definition 4 *We define* c_2Ebool_2E_21 *to be* $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(ap\ (ap\ (\text{c\_2Emin\_2E\_3D}\ (2^{A\_27$

Assume the following.

$$True \tag{6}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.((p\ (ap\ (\text{c\_2Ebool\_2EDATATYPE}\ A\_27a)\ V0x)) \Leftrightarrow True)) \tag{7}$$

Theorem 1

$$(\forall V0float\_\_compare \in ((((2^{ty\_2Ebinary\_\_ieee\_2Efloat\_\_compare})^{ty\_2Ebinary\_\_ieee\_2Efloat\_\_compare})^{ty\_2Ebinary\_\_}$$
$$(p\ (ap\ (\mathsf{c\_2Ebool\_2EDATATYPE}\ 2)\ (ap\ (ap\ (ap\ (ap\ V0float\_\_$$
$$c\_2Ebinary\_\_ieee\_2ELT)\ c\_2Ebinary\_\_ieee\_2EEQ)\ c\_2Ebinary\_$$
$$c\_2Ebinary\_\_ieee\_2EUN))))$$