

thm_2Ebinary_2IEEE_2Edatatype_float_value
(TMYR-
LKoNv8dY8kMrvp3KireohHS4LZRhaGL)

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Let $ty_2Ebinary_2IEEE_2Efloat_value : \iota$ be given. Assume the following.

$$nonempty\ ty_2Ebinary_2IEEE_2Efloat_value \quad (1)$$

Let $c_2Ebinary_2IEEE_2ENaN : \iota$ be given. Assume the following.

$$c_2Ebinary_2IEEE_2ENaN \in ty_2Ebinary_2IEEE_2Efloat_value \quad (2)$$

Let $c_2Ebinary_2IEEE_2EInfinity : \iota$ be given. Assume the following.

$$c_2Ebinary_2IEEE_2EInfinity \in ty_2Ebinary_2IEEE_2Efloat_value \quad (3)$$

Let $ty_2Erealax_2Ereal : \iota$ be given. Assume the following.

$$nonempty\ ty_2Erealax_2Ereal \quad (4)$$

Let $c_2Ebinary_2IEEE_2EFloat : \iota$ be given. Assume the following.

$$c_2Ebinary_2IEEE_2EFloat \in (ty_2Ebinary_2IEEE_2Efloat_value)^{ty_2Erealax_2Ereal} \quad (5)$$

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_2ET to be $(ap (ap (c_2Emin_2E3D (2^2)) (\lambda V0x \in 2.V0x)) (\lambda V1x \in 2.V1x))$

Definition 3 We define $c_2Ebool_2EDATATYPE$ to be $\lambda A_27a : \iota.(\lambda V0x \in A_27a.c_2Ebool_2ET)$.

Definition 4 We define c_2Ebool_2E21 to be $\lambda A_27a : \iota.(\lambda V0P \in (2^{A_27a}).(ap (ap (c_2Emin_2E3D (2^{A_27a}))$

Assume the following.

$$True \quad (6)$$

Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0x \in A_27a.((p (ap (c_2Ebool_2EDATATYPE\ A_27a)\ V0x)) \Leftrightarrow True)) \quad (7)$$

Theorem 1

$(\forall Vfloat_value \in (((2^{ty_2Ebinary_ieee_2Efloat_value})^{ty_2Ebinary_ieee_2Efloat_value})^{ty_2Ebinary_ieee_2Efloat_value})^{ty_2Ebinary_ieee_2Efloat_value}))$
 $(p (ap (c_2Ebool_2EDATATYPE 2) (ap (ap (ap Vfloat_value c_2Ebinary_ieee_2Efloat_value) c_2Ebinary_ieee_2EInfinity) c_2Ebinary_ieee_2ENaN))))$