

thm_2Ebinary_2Eieee_2Edatatype_float
(TMXHDwJgaRZbaX199Ubr8arsc3kKtXrGUdS)

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Let $ty_2Eone_2Eone : \iota$ be given. Assume the following.

$$nonempty\ ty_2Eone_2Eone \tag{1}$$

Let $ty_2Efcf_2Ecart : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow \forall A1.nonempty\ A1 \Rightarrow nonempty\ (ty_2Efcf_2Ecart\ A0\ A1) \tag{2}$$

Let $ty_2Ebinary_2Eieee_2Efloat : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow \forall A1.nonempty\ A1 \Rightarrow nonempty\ (ty_2Ebinary_2Eieee_2Efloat\ A0\ A1) \tag{3}$$

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_2E2T 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 $\lambda A_27a : \iota.(\lambda V0x \in A_27a.c_2Ebool_2E2T)$.

Definition 4 We define c_2Ebool_2E21 to be $\lambda A_27a : \iota.(\lambda V0P \in (2^{A_27a}).(ap\ (ap\ (c_2Emin_2E3D\ (2^{A_27a}))\ (\lambda V0x \in A_27a.V0x))\ (\lambda V1x \in A_27a.V1x)))$.

Assume the following.

$$True \tag{4}$$

Assume the following.

$$\forall A_27a.nonempty\ A_27a \Rightarrow (\forall V0x \in A_27a.((p\ (ap\ (c_2Ebool_2EDATATYPE\ A_27a)\ V0x)) \Leftrightarrow True)) \tag{5}$$

Theorem 1

$$\forall V0record \in (((2^{(ty_2Efc_2Ecart\ 2\ A_27t)})(ty_2Efc_2Ecart\ 2\ A_27w))(ty_2Efc_2Ecart\ 2\ ty_2Eone_2Eone)(ty_2Eone_2Eone))$$
$$\forall A_27t.nonempty\ A_27t \Rightarrow \forall A_27w.nonempty\ A_27w \Rightarrow$$
$$(\forall V1float \in (ty_2Ebinary_ieee_2Efloat\ A_27t\ A_27w).(\forall V2Sign \in (ty_2Efc_2Ecart\ 2\ ty_2Eone_2Eone).(\forall V3Exponent \in (ty_2Efc_2Ecart\ 2\ A_27w).(\forall V4Significand \in (ty_2Efc_2Ecart\ 2\ A_27t).(p\ (ap\ (c_2Ebool_2EDATATYPE\ 2)\ (ap\ (ap\ (ap\ (ap\ V0record\ V1float)\ V2Sign)\ V3Exponent)\ V4Significand))))))))))$$