thm_2EOmega_2Eeval__step__extra1 (TMYd4v5WoXruP8jLJAkvjFyuXqCS1T6cCpA)

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Let $ty\_2Einteger\_2Eint : \iota$ be given. Assume the following.

$$nonempty\ ty\_2Einteger\_2Eint \tag{1}$$

Let $ty\_2Enum\_2Enum : \iota$ be given. Assume the following.

$$nonempty\ ty\_2Enum\_2Enum \tag{2}$$

Let $ty\_2Epair\_2Eprod : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow \forall A1.nonempty\ A1 \Rightarrow nonempty\ (ty\_2Epair\_2Eprod\ A0\ A1) \tag{3}$$

Let $ty\_2Elist\_2Elist : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty\_2Elist\_2Elist\ A0) \tag{4}$$

Let $c\_2EOmega\_2Eevallower : \iota$ be given. Assume the following.

$$c\_2EOmega\_2Eevallower \in ((2^{(ty\_2Elist\_2Elist\ (ty\_2Epair\_2Eprod\ ty\_2Enum\_2Enum\ ty\_2Einteger\_2Eint))})^{ty\_2Ein} \tag{5}$$

Let $c\_2EOmega\_2Eevalupper : \iota$ be given. Assume the following.

$$c\_2EOmega\_2Eevalupper \in ((2^{(ty\_2Elist\_2Elist\ (ty\_2Epair\_2Eprod\ ty\_2Enum\_2Enum\ ty\_2Einteger\_2Eint))})^{ty\_2Ein} \tag{6}$$

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* $(ap\ (ap\ (\mathsf{c\_2Emin\_2E\_3D}\ (2^2))\ (\lambda V0x \in 2.V0x))\ (\lambda V1x \in 2.V$

Definition 3 *We define* c_2Ebool_2E_21 *to be* $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(ap\ (ap\ (\mathsf{c\_2Emin\_2E\_3D}\ (2^{A\_27}$

Definition 4 *We define* c_2Ebool_2EF *to be* $(ap\ (\mathsf{c\_2Ebool\_2E\_21}\ 2)\ (\lambda V0t \in 2.V0t))$.

Definition 5 *We define* c_2Emin_2E_3D_3D_3E *to be* $\lambda P \in 2.\lambda Q \in 2.inj\_\_o\ (p\ P \Rightarrow p\ Q)$ *of type* ι.

Definition 6 *We define* c_2Ebool_2E_2F_5C *to be* $(\lambda V0t1 \in 2.(\lambda V1t2 \in 2.(ap\ (c\_2Ebool\_2E\_21\ 2)\ (\lambda V2t \in 2$

Assume the following.

$$True \tag{7}$$

Assume the following.

$$(\forall V0t \in 2.(((True \wedge (p\ V0t)) \Leftrightarrow (p\ V0t)) \wedge ((((p\ V0t) \wedge True) \Leftrightarrow (p\ V0t)) \wedge (((False \wedge (p\ V0t)) \Leftrightarrow False) \wedge ((((p\ V0t) \wedge False) \Leftrightarrow False) \wedge (((p\ V0t) \wedge (p\ V0t)) \Leftrightarrow (p\ V0t))))))) \tag{8}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.((V0x = V0x) \Leftrightarrow True)) \tag{9}$$

Theorem 1

$$(\forall V0x \in ty\_2Einteger\_2Eint.(\forall V1ups \in (ty\_2Elist\_2Elist\ (ty\_2Epair\_2Eprod\ ty\_2Enum\_2Enum\ ty\_2Einteger\_2Eint)).(\forall V2lows \in (ty\_2Elist\_2Elist\ (ty\_2Epair\_2Eprod\ ty\_2Enum\_2Enum\ ty\_2Einteger\_2Eint)).(\forall V3ex\_27 \in 2.(((((p\ (ap\ (ap\ c\_2EOmega\_2Eevalupper\ V0x)\ V1ups)) \wedge (p\ (ap\ (ap\ c\_2EOmega\_2Eevallower\ V0x)\ V2lows))) \wedge True) \wedge (p\ V3ex\_27)) \Leftrightarrow (((p\ (ap\ (ap\ c\_2EOmega\_2Eevalupper\ V0x)\ V1ups)) \wedge (p\ (ap\ (ap\ c\_2EOmega\_2Eevallower\ V0x)\ V2lows))) \wedge (p\ V3ex\_27)))))))$$