

thm\_2Etoto\_2Edatatype\_\_num\_\_dt  
(TMQwwm3KaQN2KLHsWCZ46Vkm2bFcdPxL8TQ)

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Let  $ty\_2Etoto\_2Enum\_dt : \iota$  be given. Assume the following.

$$nonempty\ ty\_2Etoto\_2Enum\_dt \tag{1}$$

Let  $c\_2Etoto\_2Ebit2 : \iota$  be given. Assume the following.

$$c\_2Etoto\_2Ebit2 \in (ty\_2Etoto\_2Enum\_dt^{ty\_2Etoto\_2Enum\_dt}) \tag{2}$$

Let  $c\_2Etoto\_2Ebit1 : \iota$  be given. Assume the following.

$$c\_2Etoto\_2Ebit1 \in (ty\_2Etoto\_2Enum\_dt^{ty\_2Etoto\_2Enum\_dt}) \tag{3}$$

Let  $c\_2Etoto\_2Ezer : \iota$  be given. Assume the following.

$$c\_2Etoto\_2Ezer \in ty\_2Etoto\_2Enum\_dt \tag{4}$$

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

**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  $c\_2Ebool\_2E\_21$  to be  $\lambda A\_27a : \iota.(\lambda V0P \in (2^{A\_27a}).(ap (ap (c\_2Emin\_2E\_3D (2^{A\_27a}))$

Assume the following.

$$True \tag{5}$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.((p (ap (c\_2Ebool\_2EDATATYPE\ A\_27a)\ V0x)) \Leftrightarrow True)) \tag{6}$$

**Theorem 1**

$$(\forall V0num\_dt \in (((2^{(ty\_2Etoto\_2Enum\_dt^{ty\_2Etoto\_2Enum\_dt})})^{(ty\_2Etoto\_2Enum\_dt^{ty\_2Etoto\_2Enum\_dt})})^{ty\_2Etoto\_2Enum\_dt}) (p (ap (c\_2Ebool\_2EDATATYPE\ 2) (ap (ap (ap\ V0num\_dt\ c\_2Etoto\_2Ezer)\ c\_2Etoto\_2Ebit1)\ c\_2Etoto\_2Ebit2))))))$$