thm_2Esemi__ring_2Edatatype__semi__ring (TMHQSiT32gYN2xbD9BcnGP5GLmfCUEmDXBe)

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Let $ty\_2Esemi\_\_ring\_2Esemi\_\_ring : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall A0.nonempty\ A0 \Rightarrow nonempty\ (ty\_2Esemi\_\_ring\_2Esemi\_\_ring\ A0) \quad (1)$$

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

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

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

Assume the following.

$$True \quad (2)$$

Assume the following.

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0x \in A\_27a.((p\ (ap\ (\mathsf{c\_2Ebool\_2EDATATYPE}\ A\_27a)\ V0x)) \Leftrightarrow True)) \quad (3)$$

Theorem 1

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow (\forall V0record \in (((((2^{((A\_27a^{A\_27a})^{A\_27a})})^{((A\_27a^{A\_27a})^{A\_27a})})^{A\_27a})^{A\_27a})^{(ty\_2Esemi}$$
$$(\forall V1semi\_\_ring \in (ty\_2Esemi\_\_ring\_2Esemi\_\_ring\ A\_27a).$$
$$(\forall V2SR0 \in A\_27a.(\forall V3SR1 \in A\_27a.(\forall V4SRP \in ($$
$$(A\_27a^{A\_27a})^{A\_27a}).(\forall V5SRM \in ((A\_27a^{A\_27a})^{A\_27a}).(p$$
$$(ap\ (\mathsf{c\_2Ebool\_2EDATATYPE}\ 2)\ (ap\ (ap\ (ap\ (ap\ (ap\ V0record\ V1semi\_\_ring)$$
$$V2SR0)\ V3SR1)\ V4SRP)\ V5SRM)))))))))$$