thm_2Ecombin_2Eo__ASSOC (TMHAF5YvVYk5PL2hJ9FcW6oSZ1QCqHJFvfr)

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

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

Definition 4 *We define* c_2Ecombin_2Eo *to be* $\lambda A\_27a : \iota.\lambda A\_27b : \iota.\lambda A\_27c : \iota.\lambda V0f \in (A\_27b^{A\_27c}).\lambda V1g$

Theorem 1

$$\forall A\_27a.nonempty\ A\_27a \Rightarrow \forall A\_27b.nonempty\ A\_27b \Rightarrow \forall A\_27c.\ nonempty\ A\_27c \Rightarrow \forall A\_27d.nonempty\ A\_27d \Rightarrow (\forall V0f \in (A\_27b^{A\_27a}).\ (\forall V1g \in (A\_27a^{A\_27c}).(\forall V2h \in (A\_27c^{A\_27d}).((ap\ (\ ap\ (\text{c\_2Ecombin\_2Eo}\ A\_27d\ A\_27b\ A\_27a)\ V0f)\ (ap\ (ap\ (\text{c\_2Ecombin\_2Eo}\ A\_27d\ A\_27a\ A\_27c)\ V1g)\ V2h)) = (ap\ (ap\ (\text{c\_2Ecombin\_2Eo}\ A\_27d\ A\_27b\ A\_27c)\ (ap\ (ap\ (\text{c\_2Ecombin\_2Eo}\ A\_27c\ A\_27b\ A\_27a)\ V0f)\ V1g))\ V2h)))))$$