

thm_2Ebool_2ESELECT_THM
(TMR8RrtbLxTkLHspqVNnRN5kuWKhqAGzRM5)

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Definition 1 We define `c_2Emin_2E_3D` to be $\lambda A. \lambda x \in A. \lambda y \in A. \text{inj_o } (x = y)$ of type $\iota \Rightarrow \iota$.

Definition 2 We define `c_2Ebool_2E_21` to be $(\text{ap } (\text{ap } (\text{c_2Emin_2E_3D } (2^2)) (\lambda V 0x \in 2. V 0x)) (\lambda V 1x \in 2. V 1x))$

Definition 3 We define `c_2Ebool_2E_21` to be $\lambda A_27a : \iota. (\lambda V 0P \in (2^{A_27a}). (\text{ap } (\text{ap } (\text{c_2Emin_2E_3D } (2^{A_27a})) (\lambda V 0x \in 2^{A_27a}. V 0x)) (\lambda V 1x \in 2^{A_27a}. V 1x)))$

Definition 4 We define `c_2Emin_2E_40` to be $\lambda A. \lambda P \in 2^A. \text{if } (\exists x \in A. p (\text{ap } P x)) \text{ then } (\text{the } (\lambda x. x \in A \wedge p (\text{ap } P x)))$ of type $\iota \Rightarrow \iota$.

Definition 5 We define `c_2Ebool_2E_3F` to be $\lambda A_27a : \iota. (\lambda V 0P \in (2^{A_27a}). (\text{ap } V 0P (\text{ap } (\text{c_2Emin_2E_40 } A_27a) (\lambda V 1x \in A_27a. (\text{ap } V 0P V 1x))))))$

Theorem 1

$$\forall A_27a. \text{nonempty } A_27a \Rightarrow (\forall V 0P \in (2^{A_27a}). ((p (\text{ap } V 0P (\text{ap } (\text{c_2Emin_2E_40 } A_27a) (\lambda V 1x \in A_27a. (\text{ap } V 0P V 1x)))))) \Leftrightarrow (\exists V 2x \in A_27a. (p (\text{ap } V 0P V 2x)))))$$