

# t7\_cqc\_lang (TMKS- DeiQ5RPYEXorZy6PhaZVVaRgNibnk1C)

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Let  $m1\_qc\_lang1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_numbers : \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k8\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_card\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m2\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k10\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k3\_cqc\_lang : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $np\_1 : \iota$  be given. Let  $k3\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k5\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k4\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k6\_qc\_lang3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_qc\_lang3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. \neg (X0 \in X1) \wedge (v1\_xboole\_0 X1) \quad (1)$$

Assume the following.

$$\forall X0. (v1\_xboole\_0 X0) \Rightarrow (X0 = k1\_xboole\_0) \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. (m1\_subset\_1 X0 k5\_numbers) \Rightarrow (\forall X1. (m1\_qc\_lang1 \\ & X1) \Rightarrow (\forall X2. (m2\_subset\_1 X2 (k6\_qc\_lang1 X1) (k8\_qc\_lang1 \\ & X1 X0)) \Rightarrow (\forall X3. ((v3\_card\_1 X3 X0) \wedge (m2\_finseq\_1 X3 (k2\_qc\_lang1 \\ & X1)))) \Rightarrow (k6\_qc\_lang3 X1 (k10\_qc\_lang1 X1 X2 X3) = ReplSep (toset ( \\ & \lambda X4 : \iota. m1\_subset\_1 X4 k5\_numbers)) (\lambda X4 : \iota. (r1\_xxreal\_0 \\ & np\_1 X4) \wedge ((r1\_xxreal\_0 X4 (k3\_finseq\_1 X3)) \wedge (k1\_funct\_1 X3 X4 \in \\ & k4\_qc\_lang1 X1))) (\lambda X4 : \iota. k1\_funct\_1 X3 X4)))))) \quad (3) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 k5\_numbers) \Rightarrow (\forall X1.(m1\_qc\_lang1 \\ & X1) \Rightarrow (\forall X2.(m2\_subset\_1 X2 (k6\_qc\_lang1 X1) (k8\_qc\_lang1 \\ & X1 X0)) \Rightarrow (\forall X3.((v3\_card\_1 X3 X0) \wedge (m2\_finseq\_1 X3 (k2\_qc\_lang1 \\ & X1))) \Rightarrow (k5\_qc\_lang3 X1 (k10\_qc\_lang1 X1 X2 X3) = ReplSep (toset ( \\ & \lambda X4 : \iota.m1\_subset\_1 X4 k5\_numbers)) (\lambda X4 : \iota.(r1\_xxreal\_0 \\ & np\_1 X4) \wedge ((r1\_xxreal\_0 X4 (k3\_finseq\_1 X3)) \wedge (k1\_funct\_1 X3 X4 \in \\ & k5\_qc\_lang1 X1))) (\lambda X4 : \iota.k1\_funct\_1 X3 X4)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k9\_qc\_lang1 \\ & X0)) \Rightarrow ((m2\_subset\_1 X1 (k9\_qc\_lang1 X0) (k3\_qc\_lang X0)) \Leftrightarrow ((k6\_qc\_lang3 \\ & X0 X1 = k1\_xboole\_0) \wedge (k5\_qc\_lang3 X0 X1 = k1\_xboole\_0)))) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1 X0 X1) \Rightarrow ((v1\_xboole\_0 X1) \vee (X0 \in X1)) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.(m2\_finseq\_1 X1 X0) \Leftrightarrow (m1\_finseq\_1 X1 X0) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1 X0 k5\_numbers) \wedge (m1\_qc\_lang1 X1)) \Rightarrow (\neg v1\_xboole\_0 (k8\_qc\_lang1 X1 X0)) \quad (8)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\neg v1\_xboole\_0 (k6\_qc\_lang1 X0)) \quad (9)$$

Assume the following.

$$v1\_xboole\_0 k1\_xboole\_0 \quad (10)$$

Assume the following.

$$\forall X0.\exists X1.m1\_subset\_1 X1 X0 \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 \\ & X2 X0 X1) \Rightarrow (m1\_subset\_1 X2 X0)) \end{aligned} \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_qc\_lang1 X0) \wedge (m1\_subset\_1 X1 k5\_numbers)) \Rightarrow (m1\_subset\_1 (k8\_qc\_lang1 X0 X1) (k1\_zfmisc\_1 (k6\_qc\_lang1 X0))) \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((m1\_qc\_lang1 X0) \wedge ((m1\_subset\_1 \\ & X1 (k6\_qc\_lang1 X0)) \wedge (m1\_finseq\_1 X2 (k2\_qc\_lang1 X0)))) \Rightarrow (m1\_subset\_1 \\ & (k10\_qc\_lang1 X0 X1 X2) (k9\_qc\_lang1 X0)) \end{aligned} \quad (14)$$

**Theorem 1**

$$\begin{aligned} & \forall X0. (m1\_qc\_lang1 X0) \Rightarrow (\forall X1. (m1\_subset\_1 X1 k5\_numbers) \Rightarrow \\ & (\forall X2. (m2\_subset\_1 X2 (k6\_qc\_lang1 X0) (k8\_qc\_lang1 X0 X1)) \Rightarrow \\ & (\forall X3. ((v3\_card\_1 X3 X1) \wedge (m2\_finseq\_1 X3 (k2\_qc\_lang1 X0)))) \Rightarrow \\ & ((m2\_subset\_1 (k10\_qc\_lang1 X0 X2 X3) (k9\_qc\_lang1 X0) (k3\_cqc\_lang \\ & X0)) \Leftrightarrow ((ReplSep (toset (\lambda X4 : \iota. m1\_subset\_1 X4 k5\_numbers)) \\ & (\lambda X4 : \iota. (r1\_xreal\_0 np\_1 X4) \wedge ((r1\_xreal\_0 X4 (k3\_finseq\_1 \\ & X3)) \wedge (k1\_funct\_1 X3 X4 \in k5\_qc\_lang1 X0))) (\lambda X4 : \iota. k1\_funct\_1 \\ & X3 X4) = k1\_xboole\_0) \wedge (ReplSep (toset (\lambda X4 : \iota. m1\_subset\_1 \\ & X4 k5\_numbers)) (\lambda X4 : \iota. (r1\_xreal\_0 np\_1 X4) \wedge ((r1\_xreal\_0 \\ & X4 (k3\_finseq\_1 X3)) \wedge (k1\_funct\_1 X3 X4 \in k4\_qc\_lang1 X0))) (\lambda X4 : \\ & \iota. k1\_funct\_1 X3 X4) = k1\_xboole\_0)))))) \end{aligned}$$