

pre-p^{0,22}

@i Precondition for $a(v)$

$$\begin{aligned} & P \text{ State}(ds) (v:T) \\ \equiv_{\text{def}} & (\forall x:\text{Id}. \text{vartype}(i;x) \subseteq \rho \text{ ds}(x)?\text{Top}) \\ & \& \forall e@i. \text{kind}(e) = \text{locl}(a) \Rightarrow \text{valtype}(e) \subseteq \rho T \& P(\text{state when } e, \text{val}(e)) \\ & \& \forall e@i. \exists e \leq e'. \text{kind}(e') = \text{locl}(a) \vee (\forall v:T. \neg P(\text{state after } e', v)) \\ & \& ((\exists v:T. P(\text{es_init}(es)(i), v)) \Rightarrow (\exists e:\text{E}. \text{loc}(e) = i)) \end{aligned}$$

clarification:

$\text{pre-p}(es; i; ds; a; T; P)$

$$\begin{aligned} \equiv_{\text{def}} & (\forall x:\text{Id}. \text{es-vartype}(es; i; x) \subseteq \rho \text{ fpf-cap}(ds; \text{IdDeq}; x; \text{Top})) \\ & \& \text{alle-at}(es; i; e. \text{es-kind}(es; e) = \text{locl}(a) \in \text{Knd} \\ & \quad \Rightarrow \text{es-valtype}(es; e) \subseteq \rho T \& P(\text{es-state-when}(es; e), \text{es-val}(es; e))) \\ & \& \text{alle-at}(es; i; e. \text{existse-ge}(es; e; e'. \text{es-kind}(es; e') = \text{locl}(a) \in \text{Knd} \\ & \quad \vee (\forall v:T. \neg P(\text{es-state-after}(es; e'), v)))) \\ & \& ((\exists v:T. P(\text{es_init}(es)(i), v)) \Rightarrow (\exists e:\text{es-E}(es). \text{es-loc}(es; e) = i \in \text{Id})) \end{aligned}$$