

fair-fifo^{0,22}

FairFifo

$$\begin{aligned} \equiv_{\text{def}} & (\forall i:\text{Id}, t:\mathbb{N}, l:\text{IdLnk}. \neg \text{source}(l) = i \Rightarrow \text{onlnk}(l; \text{m}(i;t)) = \text{nil}) \\ & \& (\forall i:\text{Id}, t:\mathbb{N}. \text{isnull}(\text{a}(i;t)) \Rightarrow (\forall x:\text{Id}. \text{s}(i;t+1).x = \text{s}(i;t).x) \& \text{m}(i;t) = \text{nil}) \\ & \& (\forall i:\text{Id}, t:\mathbb{N}, l:\text{IdLnk}. \\ & \quad \text{isrcv}(l; \text{a}(i;t)) \\ & \quad \Rightarrow \text{destination}(l) = i \& \|\text{queue}(l;t)\| \geq 1 \& \text{hd}(\text{queue}(l;t)) = \text{msg}(\text{a}(i;t))) \\ & \& (\forall l:\text{IdLnk}, t:\mathbb{N}. \exists t':\mathbb{N}. t \leq t' \& \text{isrcv}(l; \text{a}(\text{destination}(l); t')) \vee \text{queue}(l;t') = \text{nil}) \\ & \quad \& \text{w-machine-constraint}(w) \\ & \quad \& \text{w-atom-constraint}(w) \end{aligned}$$

clarification:

fair-fifo{i:l}

$$\begin{aligned} & (w) \\ \equiv_{\text{def}} & (\forall i:\text{Id}, t:\mathbb{N}, l:\text{IdLnk}. \\ & \quad \neg \text{source}(l) = i \in \text{Id} \Rightarrow \text{onlnk}(l; \text{w-m}(w; i; t)) = \text{nil} \in \text{w-Msg}(w) \text{ List}) \\ & \& (\forall i:\text{Id}, t:\mathbb{N}. \\ & \quad \text{w-isnull}(w; \text{w-a}(w; i; t)) \\ & \quad \Rightarrow (\forall x:\text{Id}. \text{w-s}(w; i; (t+1); x) = \text{w-s}(w; i; t; x) \in \text{w-vartype}(w; i; x)) \\ & \quad \& \text{w-m}(w; i; t) = \text{nil} \in \text{w-Msg}(w) \text{ List}) \\ & \& (\forall i:\text{Id}, t:\mathbb{N}, l:\text{IdLnk}. \\ & \quad \text{w-isrcvl}(w; l; \text{w-a}(w; i; t)) \\ & \quad \Rightarrow \text{destination}(l) = i \in \text{Id} \\ & \quad \& \|\text{w-queue}(w; l; t)\| \geq 1 \\ & \quad \& \text{hd}(\text{w-queue}(w; l; t)) = \text{w-msg}(w; \text{w-a}(w; i; t)) \in \text{w-Msg}(w)) \\ & \& (\forall l:\text{IdLnk}, t:\mathbb{N}. \\ & \quad \exists t':\mathbb{N}. \\ & \quad t \leq t' \\ & \quad \& \text{w-isrcvl}(w; l; \text{w-a}(w; \text{destination}(l); t')) \\ & \quad \quad \vee \text{w-queue}(w; l; t') = \text{nil} \in \text{w-Msg}(w) \text{ List}) \\ & \& \text{w-machine-constraint}(w) \\ & \& \text{w-atom-constraint}\{i:l\} \\ & \quad (w) \end{aligned}$$