

d-feasible-fair-fifo^{11,40}

$\forall D:\text{Dsys}, \text{sched}:(\text{Id} \rightarrow (?(\mathbb{N} \rightarrow (\text{IdLnk} + \text{Id}))))$, $v:(i:\text{Id} \rightarrow \text{M}(i).(\text{timed})\text{state})$,
 $\text{dec}:(i,a:\text{Id} \rightarrow \mathbb{N} \rightarrow \text{M}(i).\text{state} \rightarrow (? \text{if } a \in \text{dom}(\text{M}(i).\text{prob}) \text{ then Outcome else Void fi }))$,
 $\text{discrete}:(\text{Id} \rightarrow \text{Id} \rightarrow \mathbb{B})$.
Feasible(D)
 $\Rightarrow$ d-feasible-discrete($D; \text{discrete}$)
 $\Rightarrow (\forall i, x:\text{Id}. (\uparrow(\text{discrete}(i, x))) \Rightarrow \text{constant_function}(v(i, x); \mathbb{Q}; \text{M}(i).\text{ds}(x)))$
 $\Rightarrow (\forall i:\text{Id}.$
 $(\forall l:\text{IdLnk}.$
 $(\text{destination}(l) = i)$
 $\Rightarrow (\uparrow \text{M}(\text{source}(l)) \text{ sends on link } l)$
 $\Rightarrow ((\uparrow \text{isl}(\text{sched}(i)))$
 $\quad c \wedge (\forall t:\mathbb{N}.$
 $\quad \exists t':\mathbb{N}$
 $\quad ((t \leq t') \ \& \ ((\uparrow \text{isl}(\text{outl}(\text{sched}(i))(t')))) \ c \wedge (\text{outl}(\text{outl}(\text{sched}(i))(t')) = l))))))$
 $\& (\forall a:\text{Id}.$
 $a \text{ in } \text{dom}(\text{M}(i).\text{pre})$
 $\Rightarrow ((\uparrow \text{isl}(\text{sched}(i)))$
 $\quad c \wedge (\forall t:\mathbb{N}.$
 $\quad \exists t':\mathbb{N}$
 $\quad ((t \leq t')$
 $\quad \& ((\uparrow(\neg_b \text{isl}(\text{outl}(\text{sched}(i))(t')))) \ c \wedge (\text{outr}(\text{outl}(\text{sched}(i))(t')) = a))))))$
 $\Rightarrow \text{FairFifo}$