possible-world[11,40]

PossibleWorld(D;w)
$\equiv_{\mathrm{def}}$ FairFifo
& (($\forall i$, x:Id. vartype(i;x) $\subseteq$r M(i).ds(x))
c$\wedge$ ($\forall i$:Id, a:Action(i). ($\neg$($\uparrow$isnull(a))) $\Rightarrow$ (valtype(i;a) $\subseteq$r M(i).da(kind(a))))
c$\wedge$ ($\forall l$:IdLnk, tg:Id. (w.M(l,tg)) $\subseteq$r M(source(l)).da(rcv(l,tg)))
c$\wedge$ ($\forall i$, x:Id. M(i).init(x,s(i;0).x))
c$\wedge$ ($\forall i$:Id, t:$\mathbb{N}$.
($\neg$($\uparrow$isnull(a(i;t))))
$\Rightarrow$ ((($\uparrow$islocal(kind(a(i;t))))
$\Rightarrow$ (M(i).pre(act(kind(a(i;t))),read-state(λx.s(i;t).x))
& ma-random(M(i);
valtype(i;a(i;t));
val(a(i;t));i;act(kind(a(i;t)));w-knum(w;i;kind(a(i;t));t))))
& ($\forall x$:Id.
M(i).ef(kind(a(i;t)),
x,read-state(λx.s(i;t).x),val(a(i;t)),λq.s(i;t+1).x(q - 1)))
& ($\forall l$:IdLnk.
M(i).send(kind(a(i;t));
l;read-state(λx.s(i;t).x);val(a(i;t));withlnk(l;m(i;t));i))
& ($\forall x$:Id.
($\neg$M(i).frame(kind(a(i;t)) affects x))
$\Rightarrow$ ($\forall r$:$\mathbb{Q}$. s(i;t).x(r + 1) = s(i;t+1).x(r)))
& ($\forall l$:IdLnk, tg:Id.
($\neg$M(i).sframe(kind(a(i;t)) sends <l,tg>))
$\Rightarrow$ (w-tagged(tg;onlnk(l;m(i;t))) = []))))
c$\wedge$ (($\forall i$, a:Id, t:$\mathbb{N}$.
$\exists t'$:$\mathbb{N}$
(($t \leq t'$)
& ((($\neg$($\uparrow$isnull(a(i;t')))) c$\wedge$ (kind(a(i;t')) = locl(a)))
$\vee$ ($\neg a$ declared in M(i))
$\vee$ unsolvable M(i).pre(a,read-state(λx.s(i;t').x)))))
& ($\forall i$:Id, t:$\mathbb{N}$.
($\neg$($\uparrow$isnull(a(i;t))))
$\Rightarrow$ ($\forall x$:Id.
($\neg$M(i).aframe(kind(a(i;t)) affects x))
$\Rightarrow$ ($\forall r$:$\mathbb{Q}$. s(i;t).x(r + 1) = s(i;t+1).x(r))))
& ($\forall i$, x:Id, k:Knd.
($\neg$M(i).rframe(k reads x)) $\Rightarrow$ w-machine-independent(w;i;k;x))
& ($\forall i$:Id, t:$\mathbb{N}$.
($\neg$($\uparrow$isnull(a(i;t))))
$\Rightarrow$ ($\forall l$:IdLnk.
($\neg$M(i).bframe(kind(a(i;t)) sends on l)) $\Rightarrow$ (onlnk(l;m(i;t)) = [])))))

clarification:

possible-world{i:l}
    $(D;\ w)$
$\equiv_{\mathrm{def}}$ fair-fifo{i:l}
    (w)
  & $((\forall i{:}\mathrm{Id},\ x{:}\mathrm{Id}.\ \text{w-vartype}(w;\ i;\ x) \subseteq\text{r d-m}(D;\ i).\mathrm{ds}(x))$
    $c\wedge\ (\forall i{:}\mathrm{Id},\ a{:}\text{w-action}(w;\ i).$
      $(\neg(\uparrow\text{w-isnull}(w;\ a))) \Rightarrow (\text{w-valtype}(w;\ i;\ a) \subseteq\text{r d-m}(D;\ i).\mathrm{da}(\text{w-kind}(w;\ a))))$
    $c\wedge\ (\forall l{:}\mathrm{IdLnk},\ tg{:}\mathrm{Id}.\ (w.\mathrm{M}(l,tg)) \subseteq\text{r d-m}(D;\ \mathrm{source}(l)).\mathrm{da}(\mathrm{rcv}(l,tg)))$
    $c\wedge\ (\forall i{:}\mathrm{Id},\ x{:}\mathrm{Id}.\ \text{d-m}(D;\ i).\mathrm{init}(x,\text{w-s}(w;\ i;\ 0;\ x)))$
    $c\wedge\ (\forall i{:}\mathrm{Id},\ t{:}\mathbb{N}.$
      $(\neg(\uparrow\text{w-isnull}(w;\ \text{w-a}(w;\ i;\ t))))$
      $\Rightarrow (((\uparrow\mathrm{islocal}(\text{w-kind}(w;\ \text{w-a}(w;\ i;\ t))))$
        $\Rightarrow (\text{d-m}(D;\ i).\mathrm{pre}(\mathrm{act}(\text{w-kind}(w;\ \text{w-a}(w;\ i;\ t))),$
          $\text{read-state}(\lambda x.\text{w-s}(w;\ i;\ t;\ x)))$
          $\&\ \text{ma-random}(\text{d-m}(D;\ i);$
            $\text{w-valtype}(w;\ i;\ \text{w-a}(w;\ i;\ t));$
            $\text{w-val}(w;\ \text{w-a}(w;\ i;\ t));$
            $i;$
            $\mathrm{act}(\text{w-kind}(w;\ \text{w-a}(w;\ i;\ t)));$
            $\text{w-knum}(w;i;\text{w-kind}(w;\ \text{w-a}(w;\ i;\ t));t))))$
      $\&\ (\forall x{:}\mathrm{Id}.$
        $\text{d-m}(D;\ i).\mathrm{ef}(\text{w-kind}(w;\ \text{w-a}(w;\ i;\ t)),$
        $x,$
        $\text{read-state}(\lambda x.\text{w-s}(w;\ i;\ t;\ x)),$
        $\text{w-val}(w;\ \text{w-a}(w;\ i;\ t)),\lambda q.\text{w-s}(w;\ i;\ (t{+}1);\ x)(q\ \text{-}\ 1)))$
      $\&\ (\forall l{:}\mathrm{IdLnk}.$
        $\text{d-m}(D;\ i).\mathrm{send}(\text{w-kind}(w;\ \text{w-a}(w;\ i;\ t));$
        $l;$
        $\text{read-state}(\lambda x.\text{w-s}(w;\ i;\ t;\ x));$
        $\text{w-val}(w;\ \text{w-a}(w;\ i;\ t));\mathrm{withlnk}(l;\text{w-m}(w;\ i;\ t));i))$
      $\&\ (\forall x{:}\mathrm{Id}.$
        $(\neg\text{d-m}(D;\ i).\mathrm{frame}(\text{w-kind}(w;\ \text{w-a}(w;\ i;\ t))\ \text{affects}\ x))$
        $\Rightarrow (\forall r{:}\mathbb{Q}.$
          $\text{w-s}(w;\ i;\ t;\ x)(r + 1) = \text{w-s}(w;\ i;\ (t{+}1);\ x)(r) \in \text{w-vartype}(w;\ i;\ x)))$
      $\&\ (\forall l{:}\mathrm{IdLnk},\ tg{:}\mathrm{Id}.$
        $(\neg\text{d-m}(D;\ i).\mathrm{sframe}(\text{w-kind}(w;\ \text{w-a}(w;\ i;\ t))\ \text{sends}\ {<}l,tg{>}))$
        $\Rightarrow (\text{w-tagged}(tg;\mathrm{onlnk}(l;\text{w-m}(w;\ i;\ t))) = [] \in (\text{w-Msg}(w)\ \mathrm{List})))))$
    $c\wedge\ ((\forall i{:}\mathrm{Id},\ a{:}\mathrm{Id},\ t{:}\mathbb{N}.$
      $\exists t'{:}\mathbb{N}$
      $((t \le t')$
      $\&\ (((\neg(\uparrow\text{w-isnull}(w;\ \text{w-a}(w;\ i;\ t'))))$
        $c\wedge\ (\text{w-kind}(w;\ \text{w-a}(w;\ i;\ t')) = \mathrm{locl}(a) \in \mathrm{Knd}))$
        $\vee\ (\neg a\ \text{declared in d-m}(D;\ i))$

$\vee$ unsolvable d-m(D; i).pre(a,read-state(λx.w-s(w; i; t'; x))))))
& ($\forall i$:Id, t:$\mathbb{N}$.
(¬(↑w-isnull(w; w-a(w; i; t))))
$\Rightarrow$ ($\forall x$:Id.
(¬d-m(D; i).aframe(w-kind(w; w-a(w; i; t)) affects x))
$\Rightarrow$ ($\forall r$:$\mathbb{Q}$.
w-s(w; i; t; x)(r + 1)
=
w-s(w; i; (t+1); x)(r)
$\in$ w-vartype(w; i; x))))
& ($\forall i$:Id, x:Id, k:Knd.
(¬d-m(D; i).rframe(k reads x)) $\Rightarrow$ w-machine-independent(w;i;k;x))
& ($\forall i$:Id, t:$\mathbb{N}$.
(¬(↑w-isnull(w; w-a(w; i; t))))
$\Rightarrow$ ($\forall l$:IdLnk.
(¬d-m(D; i).bframe(w-kind(w; w-a(w; i; t)) sends on l))
$\Rightarrow$ (onlnk(l;w-m(w; i; t)) = [] $\in$ (w-Msg(w) List))))))