$\overline{}$ MODULE $DEFRoot$ $\overline{}$

VARIABLES fid, $fstates$, $msgs$, $thrds$, $mseq$, $p0adoptSet$
CONSTANTS $PLACE$, $MXFINISHES$, $PROG\_HOME$, $MXTHREADS$, $NBLOCKS$, $MXSTMTS$
INSTANCE $Commons$

$Alloc(type,\ here,\ parent,\ root) \triangleq$ $\quad$ parent not used here
$\quad \wedge fstates[fid].status =$ "unused"
$\quad \wedge fstates' = [fstates$ EXCEPT $![fid].id = fid,$
$\qquad\qquad\qquad\qquad\qquad ![fid].count = 1,$
$\qquad\qquad\qquad\qquad\qquad ![fid].status =$ "waiting",
$\qquad\qquad\qquad\qquad\qquad ![fid].type = type,$
$\qquad\qquad\qquad\qquad\qquad ![fid].here = here,$
$\qquad\qquad\qquad\qquad\qquad ![fid].root = root]$

$NotifySubActivitySpawn(dst) \triangleq$
$\quad$ LET $here \triangleq fstates[fid].here$
$\quad$ IN $\quad \vee \wedge dst = here$
$\qquad\qquad\qquad \wedge fstates' = [fstates$ EXCEPT $![fid].count = @ + 1]$
$\qquad\quad \vee \wedge dst \neq here$
$\qquad\qquad\qquad \wedge fstates' = [fstates$ EXCEPT $![fid].remActs[dst] = @ + 1]$

$NotifySubActivitySpawnError(dst) \triangleq$ FALSE

$NotifyRemoteActivityCreation(src,\ activity,\ inMsg) \triangleq$
$\quad \wedge fstates' = fstates$
$\quad \wedge RecvMsg(inMsg)$

$NotifyLocalActivitySpawnAndCreation(here,\ activity) \triangleq$
$\quad NotifySubActivitySpawn(here)$

$LastActivity \triangleq$
$\quad \wedge fstates[fid].count = 1$
$\quad \wedge \forall\, p \in PLACE : fstates[fid].remActs[p] = 0$

$NotifyActivityTermination \triangleq$
$\quad \wedge fstates[fid].count > 0$
$\quad \wedge$ IF $LastActivity$
$\qquad$ THEN $fstates' = [fstates$ EXCEPT $![fid].count = @ - 1,$
$\qquad\qquad\qquad\qquad\qquad\qquad ![fid].status =$ "finished"]
$\qquad$ ELSE $fstates' = [fstates$ EXCEPT $![fid].count = @ - 1]$

$PushException(e) \triangleq$
$\quad \wedge fstates' = [fstates$ EXCEPT $![fid].excs = Append(@,\ e)]$

$SendTermMsg \triangleq$
$\quad \wedge fstates' = [fstates$ EXCEPT $![fid].status =$ "forgotten"]

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$$\land\ msgs' = msgs$$
$$\land\ mseq' = mseq$$

$LastActivity2(here,\ msgRemActs)\ \triangleq$
  $\land\ fstates[fid].count + msgRemActs[here] = 0$
  $\land\ \forall\, p \in PLACE \setminus \{here\} : fstates[fid].remActs[p] + msgRemActs[p] = 0$

$ProcessChildTermMsg(msg)\ \triangleq$
  LET $here\ \triangleq\ fstates[fid].here$
    $src\ \triangleq\ msg.src$
    $remActs\ \triangleq\ msg.remActs$
    $excs\ \triangleq\ msg.excs$
  IN $\land$ IF $LastActivity2(here,\ remActs)$
      THEN $fstates' = [fstates$ EXCEPT $![fid].remActs =\ [p \in PLACE \mapsto$
                          IF $p = here$
                           THEN $fstates[fid].remActs[p]$
                           ELSE $fstates[fid].remActs[p] + remActs[p]],$
                     $![fid].count = @ + remActs[here],$
                     $![fid].excs = @ \circ excs,$
                     $![fid].status =$ "finished"$]$
      ELSE $fstates' = [fstates$ EXCEPT $![fid].remActs = [p \in PLACE \mapsto$
                          IF $p = here$
                           THEN $fstates[fid].remActs[p]$
                           ELSE $fstates[fid].remActs[p] + remActs[p]],$
                     $![fid].excs = @ \circ excs,$
                     $![fid].count = @ + remActs[here]]$
    $\land\ RecvMsg(msg)$

\ * Modification History
\ * Last modified *Mon Nov* 06 19:13:06 *AEDT* 2017 by *u5482878*
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