MODULE *Controller*

LOCAL INSTANCE *Naturals*

LOCAL INSTANCE *Sequences*

LOCAL INSTANCE *TLC*

CONSTANT *Nil*

VARIABLE *time*

$Clock \triangleq$ INSTANCE *Clock*

A queue of request to reconcile

VARIABLE *queue*

$Enqueue(id) \triangleq$
$\land\ queue' = Append(queue,\ [id \mapsto id,\ time \mapsto Nil])$

$Retry(request) \triangleq$
$\land\ queue' = \langle [id \mapsto request.id,\ time \mapsto Nil] \rangle \circ queue'$

$Requeue(request) \triangleq$
$\land\ queue' = Append(queue',\ [id \mapsto request.id,\ time \mapsto Nil])$

$RequeueAfter(request,\ duration) \triangleq$
$\land$ LET $t \triangleq Clock!Time + duration$
IN
$\land\ queue' = Append(queue',\ [id \mapsto request.id,\ time \mapsto t])$

LOCAL $ReconcileRequest(R(\_)) \triangleq$
$\land\ \exists\, r \in queue : r.time = Nil$
$\land$ LET $r \triangleq$ CHOOSE $x \in$ DOMAIN $queue$:
$\land\ queue[x].time = Nil$
$\land\ \forall\, y \in \{z \in \text{DOMAIN } queue : queue[z].time = Nil\} : x \leq y$
$request \triangleq queue[r]$
IN
$\land\ R(request)$
$\land\ queue' = SubSeq(queue,\ 0,\ r) \circ SubSeq(queue,\ r+1,\ Len(queue))$

LOCAL $ReconcileDelayed(R(\_)) \triangleq$
$\land\ \exists\, r \in queue : r.time \leq Clock!Time$
$\land$ LET $r \triangleq$ CHOOSE $x \in$ DOMAIN $queue$:
$\land\ queue[x].time \leq Clock!Time$
$\land\ \forall\, y \in \{z \in \text{DOMAIN } queue : queue[z].time \leq Clock!Time\} : queue[x].time \leq queue[y].time$
$request \triangleq queue[r]$

IN
$\land\ R(request)$
$\land\ queue' = SubSeq(queue,\ 0,\ r) \circ SubSeq(queue,\ r + 1,\ Len(queue))$

$Reconcile(R(\_)) \triangleq$
$\lor\ ReconcileRequest(R)$
$\lor\ ReconcileDelayed(R)$

$Init \triangleq$
$\land\ queue = \langle\rangle$

$Next \triangleq$
$\lor$ FALSE

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* Modification History
* Last modified *Thu Aug* 19 12:07:02 *PDT* 2021 by *jordanhalterman*
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