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|----- MODULE ReliableCausalNetwork -----|
| EXTENDS Network, Naturals |
|-----|
| VARIABLES |
|   vc |
|-----|
| vector  $\triangleq$  [Replica  $\rightarrow$  Nat] |
| initvector  $\triangleq$  [r  $\in$  Replica  $\mapsto$  0] |
|-----|
| Init  $\triangleq$   $\wedge$  NInit |
|            $\wedge$  vc = [r  $\in$  Replica  $\mapsto$  initvector] |
| |
| Broadcast(r, m)  $\triangleq$   $\wedge$  NBroadcast(r, m) |
|                        $\wedge$  vc' = [vc EXCEPT ![r][r] = @ + 1] |
| |
| Deliver(r)  $\triangleq$  |
|    $\wedge$  incoming[r]  $\neq$  EmptyBag |
|    $\wedge$   $\exists m \in \text{BagToSet}(\text{incoming}[r]) : \neg \text{IfDeliverMsg}(m, r)$  |
|        $\wedge \forall s \in \text{Replica} :$  |
|          $\vee m.vc[s] \leq vc[r][s]$  |
|          $\vee s \neq m.r$  |
|          $\wedge m.vc[m.r] = vc[r][m.r] + 1$  |
|          $\wedge vc' = [vc \text{ EXCEPT } ![r][m.r] = @ + 1]$  |
|          $\wedge msg' = [msg \text{ EXCEPT } ![r] = m]$  |
|    $\wedge$  UNCHANGED  $\langle incoming \rangle$  |
|-----|
| \ * Modification History |
| \ * Last modified Wed May 29 21:04:25 CST 2019 by xhdn |
| \ * Last modified Mon May 06 16:07:42 CST 2019 by jywellin |
| \ * Created Tue Apr 02 15:26:19 CST 2019 by jywellin |

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