―――――――――――――― MODULE *JupiterCtx* ――――――――――――――

Definitions and operators for context-based *Jupiter* protocols, including *AbsJupiter*, *CJupiter*, and *XJupiter*.

6 EXTENDS *JupiterInterface*

7 ├――――――――――――――――――――――――――――――――――――

8 VARIABLES

9   *cseq*,   *cseq*[*c*]: local sequence number at client $c \in Client$

10   *ds*   *ds*[*r*]: document state (a set of *Oids*) of replica $r \in Replica$

12 $ctxVars \triangleq \langle cseq, ds \rangle$

13 ├――――――――――――――――――――――――――――――――――――

14 $Oid \triangleq [c : Client, seq : Nat]$ operation identifier

15 $Cop \triangleq [op : Op \cup \{Nop\}, oid : Oid, ctx : \text{SUBSET } Oid]$ contexted-based *op*

17 $COT(lcop, rcop) \triangleq$ *OT* of two *Cop*(s).

18      $[lcop \text{ EXCEPT } !.op = Xform(lcop.op, rcop.op), !.ctx = @ \cup \{rcop.oid\}]$

20 $UpdateDS(r, cop) \triangleq$ update *ds* to include new *Cop* (in terms of *oid*)

21      $ds' = [ds \text{ EXCEPT } ![r] = @ \cup \{cop.oid\}]$

22 ├――――――――――――――――――――――――――――――――――――

23 $TypeOKCtx \triangleq$

24      $\wedge cseq \in [Client \rightarrow Nat]$

25      $\wedge ds \in [Replica \rightarrow \text{SUBSET } Oid]$

27 $InitCtx \triangleq$

28      $\wedge cseq = [c \in Client \mapsto 0]$

29      $\wedge ds = [r \in Replica \mapsto \{\}]$

31 $DoCtx(c) \triangleq$

32      $\wedge cseq' = [cseq \text{ EXCEPT } ![c] = @ + 1]$

33      $\wedge$ don't know the generated cop; no way to update *ds*

35 $RevCtx(c) \triangleq$

36      $\wedge UpdateDS(c, Head(cincoming[c]))$

37      $\wedge$ UNCHANGED *cseq*

39 $SRevCtx \triangleq$

40      $\wedge UpdateDS(Server, Head(sincoming))$

41      $\wedge$ UNCHANGED *cseq*

42 └――――――――――――――――――――――――――――――――――――

\ * Modification History
\ * Last modified *Tue Dec* 18 22:21:38 *CST* 2018 by *hengxin*
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