

```

1  |----- 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 ∈ Client
10     ds ds[r]: document state (a set of Oids) of replica r ∈ Replica
12     ctxVars  $\triangleq$   $\langle cseq, ds \rangle$ 
13 |-----|
14 Oid  $\triangleq$  [c : Client, seq : Nat] operation identifier
15 Cop  $\triangleq$  [op : Op ∪ {Nop}, oid : Oid, ctx : SUBSET Oid] contexted-based op
17 ClientOf(cop)  $\triangleq$  cop.oid.c
19 COT(lcp, rcp)  $\triangleq$  OT of two Cop(s).
20 [lcp EXCEPT !.op = Xform(lcp.op, rcp.op), !.ctx = @ ∪ {rcp.oid}]
22 UpdateDS(r, oid)  $\triangleq$  update ds[r] to include new oid ∈ Oid
23 ds' = [ds EXCEPT ![r] = @ ∪ {oid}]
24 |-----|
25 TypeOKCtx  $\triangleq$ 
26     ∧ cseq ∈ [Client → Nat]
27     ∧ ds ∈ [Replica → SUBSET Oid]
29 InitCtx  $\triangleq$ 
30     ∧ cseq = [c ∈ Client ↦ 0]
31     ∧ ds = [r ∈ Replica ↦ {}]
33 DoCtx(c)  $\triangleq$ 
34     ∧ cseq' = [cseq EXCEPT ![c] = @ + 1]
35     ∧ UpdateDS(c, [c ↦ c, seq ↦ cseq'[c]])
37 RevCtx(c)  $\triangleq$ 
38     ∧ UpdateDS(c, Head(cincoming[c]).oid)
39     ∧ UNCHANGED cseq
41 SRevCtx  $\triangleq$ 
42     ∧ UpdateDS(Server, Head(sincoming).oid)
43     ∧ UNCHANGED cseq
44 |-----|
   | \ * Modification History |
   | \ * Last modified Mon Dec 31 18:52:44 CST 2018 by hengxin |
   | \ * Created Wed Dec 05 20:03:50 CST 2018 by hengxin |

```