---------------------------- MODULE *JupiterOid* ----------------------------

EXTENDS *JupiterInterface*, *OT*

VARIABLES
$\quad$ *cseq* $\quad$ *cseq[c]*: local sequence number at client $c \in Client$

oidVars $\triangleq$ $\langle cseq \rangle$

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

$Oop \triangleq [op : Op \cup \{Nop\}, oid : Oid]$ $\quad$ operation identified by *oid*

$OOT(loop, roop) \triangleq$ $\quad$ OT of $loop \in Oop$ against $roop \in Oop$
$\qquad [loop \text{ EXCEPT } !.op = OT(loop.op, roop.op)]$

$xForm(r, cop) \triangleq$ $\quad$ Transform cop at replica r.
$\quad$ LET $ctxDiff \triangleq ds[r] \setminus cop.ctx$ $\quad$ calculate concurrent operations
$\qquad xFormHelper(coph, ctxDiffh, xcopssh) \triangleq$ $\quad$ Return transformed $xcop$ and
$\qquad\quad$ IF $ctxDiffh = \{\}$ THEN $[xcop \mapsto coph, xcopss \mapsto xcopssh]$ $\quad$ new $copss$
$\qquad\quad$ ELSE LET $foidh \triangleq$ CHOOSE $oid \in ctxDiffh :$ $\quad$ the first oid in $ctxDiffh$
$\qquad\qquad\qquad\qquad\qquad \forall id \in ctxDiffh \setminus \{oid\} : tb(oid, id, serial[r])$
$\qquad\qquad\qquad fcoph \triangleq$ CHOOSE $fcop \in copss[r] :$
$\qquad\qquad\qquad\qquad\qquad fcop.oid = foidh \wedge fcop.ctx = coph.ctx$ $\quad$ CC
$\qquad\qquad\qquad xcoph \triangleq COT(coph, fcoph)$
$\qquad\qquad\qquad xfcoph \triangleq COT(fcoph, coph)$
$\qquad\qquad\quad$ IN $\quad xFormHelper(xcoph, ctxDiffh \setminus \{fcoph.oid\},$
$\qquad\qquad\qquad\qquad\qquad\qquad\qquad xcopssh \cup \{xcoph, xfcoph\})$
$\quad$ IN $\quad xFormHelper(cop, ctxDiff, copss[r] \cup \{cop\})$