MODULE $AJupiter$

VARIABLES $cbuf$, $crec$, $sbuf$, $srec$

$AJMsg \triangleq [c : Client,\ ack : Nat,\ op : Op \cup \{Nop\}] \cup$ from client c to $Server$
$[ack : Nat,\ op : Op \cup \{Nop\}]$ from $Server$ to clients

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$Do(c,\ op) \triangleq \land\ cbuf' = [cbuf \text{ EXCEPT } ![c] = Append(@,\ op)]$
$\land\ crec' = [crec \text{ EXCEPT } ![c] = 0]$
$\land$ apply op to $list[c]$
$\land$ send $[c \mapsto c, ack \mapsto crec[c], op \mapsto op]$ to the $Server$

$Rev(c,\ m) \triangleq$ LET $xform \triangleq xFormShift(m.op,\ cbuf[c],\ m.ack)$ $xform : [xop, xops]$
IN $\land\ cbuf' = [cbuf \text{ EXCEPT } ![c] = xform.xops]$
$\land\ crec' = [crec \text{ EXCEPT } ![c] = @ + 1]$
$\land$ apply $xform.xop$ to $list[c]$

$SRev(m) \triangleq$ LET $c \triangleq m.c$
$xform \triangleq xFormShift(m.op,\ sbuf[c],\ m.ack)$ $xform : [xop, xops]$
$xop \triangleq xform.xop$
IN $\land\ srec' = [cl \in Client \mapsto \text{IF } cl = c \text{ THEN } srec[cl] + 1 \text{ ELSE } 0]$
$\land\ sbuf' = [cl \in Client \mapsto \text{IF } cl = c \text{ THEN } xform.xops$
ELSE $Append(sbuf[cl],\ xop)]$
$\land$ apply xop to $list[Server]$
$\land$ send $[ack \mapsto srec[cl], op \mapsto xop]$ to client $cl \neq c$