MODULE *XJupiterImplCJupiter*

EXTENDS *XJupiter*

We have omitted the history variables for recording serial views.

VARIABLES *op2ss*, a function mapping an operation (identifier) to the $2D$ digraph produced during its transformation at the server

*c2ssX* *c2ssX*[*c*]: $2D$ digraph that has been skipped by client *c*

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$$
\begin{aligned}
InitImpl \triangleq\ & \land\ Init \\
& \land\ \text{on history variables for serial views} \\
& \land\ op2ss = \langle\rangle \ \text{the empty function expressed in TLA}^+ \\
& \land\ c2ssX = [c \in Client \mapsto EmptyGraph]
\end{aligned}
$$

$$
\begin{aligned}
DoImpl(c,\ op) \triangleq\ & \land\ Do(c,\ op) \\
& \land\ \text{on history variables for serial views}
\end{aligned}
$$

$$
\begin{aligned}
RevImpl(c,\ cop) \triangleq\ & \land\ Rev(c,\ cop) \\
& \land\ \text{on history variables for serial views} \\
& \land\ c2ssX' = [c2ssX \ \text{EXCEPT}\ ![c] = @ \oplus op2ss[cop.oid]]
\end{aligned}
$$

$$
\begin{aligned}
SRevImpl(cop) \triangleq\ & \land\ SRev(cop) \\
& \land\ \text{on history variables for serial views} \\
& \land\ \text{LET}\ xform \triangleq xForm(NextEdge,\ Server,\ cop, \\
& \qquad\qquad s2ss[ClientOf(cop)]) \\
& \quad \text{IN}\ \ op2ss' = op2ss\ @@\ (cop.oid :> xform.xg)
\end{aligned}
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$$
\begin{aligned}
CJ \triangleq\ & \text{INSTANCE}\ CJupiter\ \text{WITH}\ css \leftarrow [r \in Replica \mapsto \\
& \qquad \text{IF}\ r = Server\ \text{THEN}\ SetReduce(\oplus,\ Range(s2ss),\ EmptyGraph) \\
& \qquad\qquad \text{ELSE}\ \ c2ss[r] \oplus c2ssX[r]]
\end{aligned}
$$