MODULE *JupiterInterface*

Interface of a family of *Jupiter* protocols.

EXTENDS *Op*

VARIABLES

aop, *aop*[*r*]: the actual operation applied at replica $r \in Replica$

state, *state*[*r*]: state (the list content) of replica $r \in Replica$

chins a set of chars allowed to insert; this is for model checking

$intVars \triangleq \langle aop, state, cincoming, sincoming, chins \rangle$

$SetNewAop(r, aopr) \triangleq$
$aop' = [aop \text{ EXCEPT } ![r] = aopr]$

$ApplyNewAop(r) \triangleq$
$state' = [state \text{ EXCEPT } ![r] = Apply(aop'[r], @)]$

$TypeOKInt \triangleq$
$\land\ aop \in [Replica \to Op \cup \{Nop\}]$
$\land\ state \in [Replica \to List]$
$\land\ Comm!TypeOK$
$\land\ chins \subseteq Char$

$InitInt \triangleq$
$\land\ aop = [r \in Replica \mapsto Nop]$
$\land\ state = [r \in Replica \mapsto InitState]$
$\land\ Comm!Init$
$\land\ chins = Char$

$DoIns(DoOp(\_, \_), c) \triangleq$ Client $c \in$ Client generates and processes an "*Ins*" operation.
$\exists\, ins \in Ins :$
$\land\ ins.pos \in 1 \,..\, (Len(state[c]) + 1)$
$\land\ ins.ch \in chins$
$\land\ ins.pr = Priority[c]$
$\land\ DoOp(c, ins)$
$\land\ chins' = chins \setminus \{ins.ch\}$ We assume that all inserted elements are unique.

$DoDel(DoOp(\_, \_), c) \triangleq$ Client $c \in$ Client generates and processes a "*Del*" operation.
$\exists\, del \in Del :$
$\land\ del.pos \in 1 \,..\, Len(state[c])$
$\land\ DoOp(c, del)$
$\land$ UNCHANGED *chins*

$DoInt(DoOp(\_, \_), c) \triangleq$ Client $c \in$ Client generates an operation.
$\land\ \lor DoIns(DoOp, c)$ *DoOp*($c \in Client$, $op \in Op$)
$\lor DoDel(DoOp, c)$

$\land$ $ApplyNewAop(c)$

$RevInt(ClientPerform(\_, \_),\ c) \triangleq$ Client $c \in$ Client receives and processes a message.
$\land$ $Comm!CRev(c)$
$\land$ $ClientPerform(c,\ Head(cincoming[c]))$ $ClientPerform(c \in Client,\ m \in Msg)$
$\land$ $ApplyNewAop(c)$
$\land$ UNCHANGED $chins$

$SRevInt(ServerPerform(\_)) \triangleq$ The *Server* receives and processes a message.
$\land$ $Comm!SRev$
$\land$ $ServerPerform(Head(sincoming))$ $ServerPerform(m \in Msg)$
$\land$ $ApplyNewAop(Server)$
$\land$ UNCHANGED $chins$

* Modification History
* Last modified Sun *Jan* 13 10:53:07 *CST* 2019 by *hengxin*
* Created *Tue Dec* 04 19:01:01 *CST* 2018 by *hengxin*