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1 |----- MODULE CComm -----|
2 | EXTENDS SequenceUtils      |
3 |-----|
4 | CONSTANTS
5 |     Client, the set of clients
6 |     Server, the (unique) server
7 |     Msg     the set of messages
8 |-----|
9 | VARIABLES
10 |     cincoming, cincoming[c]: incoming FIFO channel at client  $c \in Client$ 
11 |     sincoming  incoming FIFO channel at the Server
12 |-----|
13 | TypeOK  $\triangleq$ 
14 |      $\wedge$  cincoming  $\in [Client \rightarrow Seq(Msg)]$ 
15 |      $\wedge$  sincoming  $\in Seq(Msg)$ 
16 |
17 | Init  $\triangleq$ 
18 |      $\wedge$  cincoming =  $[c \in Client \mapsto \langle \rangle]$ 
19 |      $\wedge$  sincoming =  $\langle \rangle$ 
20 |
21 | EmptyChannel  $\triangleq$  Init
22 |-----|
23 | CSend(msg)  $\triangleq$  A client sends a message msg to the Server.
24 |      $\wedge$  sincoming' = Append(sincoming, msg)
25 |      $\wedge$  UNCHANGED cincoming
26 |
27 | CRev(c)  $\triangleq$  Client c receives and consumes a message from the Server.
28 |      $\wedge$  cincoming[c]  $\neq \langle \rangle$ 
29 |      $\wedge$  cincoming' = [cincoming EXCEPT ![c] = Tail(@)]
30 |      $\wedge$  UNCHANGED sincoming
31 |-----|
32 | SRev  $\triangleq$  The Server receives and consumes a message.
33 |      $\wedge$  sincoming  $\neq \langle \rangle$ 
34 |      $\wedge$  sincoming' = Tail(sincoming)
35 |
36 | SSend(c, cmsg)  $\triangleq$  The Server sends a message cmsg to each client other than  $c \in Client$ .
37 |      $\wedge$  cincoming' = [ $cl \in Client \mapsto$  IF  $cl = c$ 
38 |                                     THEN cincoming[cl]
39 |                                     ELSE Append(cincoming[cl], cmsg[cl])]
40 |
41 | SSendSame(c, msg)  $\triangleq$  The Server broadcasts the message msg to all clients other than  $c \in Client$ .
42 |      $\wedge$  SSend(c, [ $cl \in Client \mapsto msg$ ])
43 |-----|
44 |
45 | \ * Modification History
46 | \ * Last modified Fri Jan 04 10:34:54 CST 2019 by hengxin
47 | \ * Created Sun Jun 24 10:25:34 CST 2018 by hengxin

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