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1  |----- MODULE CSComm -----|
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 ∈ Client
11     sincoming incoming FIFO channel at the Server
12 |-----|
13 TypeOK ≜
14     ∧ cincoming ∈ [Client → Seq(Msg)]
15     ∧ sincoming ∈ Seq(Msg)
17 Init ≜
18     ∧ cincoming = [c ∈ Client ↦ ⟨⟩]
19     ∧ sincoming = ⟨⟩
21 EmptyChannel ≜ Init
22 |-----|
23 CSend(m) ≜ A client sends a message m to the Server.
24     ∧ sincoming' = Append(sincoming, m)
25     ∧ UNCHANGED cincoming
27 CRev(c) ≜ Client c receives and consumes a message from the Server.
28     ∧ cincoming[c] ≠ ⟨⟩
29     ∧ cincoming' = [cincoming EXCEPT ![c] = Tail(@)]
30     ∧ UNCHANGED sincoming
31 |-----|
32 SRev ≜ The Server receives and consumes a message.
33     ∧ sincoming ≠ ⟨⟩
34     ∧ sincoming' = Tail(sincoming)
36 SSend(c, cm) ≜ The Server sends a message cm[cl] to client cl (other than c).
37     cincoming' = [cl ∈ Client ↦ IF cl = c THEN cincoming[cl]
38                     ELSE Append(cincoming[cl], cm[cl])]
40 SSendSame(c, m) ≜ The Server broadcasts the message m to all clients other than c.
41     SSend(c, [cl ∈ Client ↦ m])
42 |-----|
    \ * Modification History
    \ * Last modified Sat Jan 19 16:28:48 CST 2019 by hengxin
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