MODULE *SCTP*

LOCAL INSTANCE *Naturals*

LOCAL INSTANCE *Sequences*

LOCAL INSTANCE *FiniteSets*

LOCAL INSTANCE *TLC*

CONSTANT *Nil*

LOCAL $Min(s) \triangleq$ CHOOSE $x \in s : \forall\, y \in s : x \geq y$

LOCAL $Max(s) \triangleq$ CHOOSE $x \in s : \forall\, y \in s : x \leq y$

VARIABLE *servers*

VARIABLE *conns*

MODULE *Client*

$Connect(c,\, s) \triangleq$
  LET $maxId \triangleq Max(\text{DOMAIN } conns)$
      $connId \triangleq Min(\{i \in 1\,..\,(maxId + 1) : i \notin \text{DOMAIN } conns\})$
  IN $conns' = conns \mathbin{@@} (connId :> [id \mapsto connId,\, src \mapsto c,\, dst \mapsto s,\, req \mapsto \langle\rangle,\, res \mapsto \langle\rangle])$

$Disconnect(c) \triangleq$
  $conns' = [x \in \text{DOMAIN } conns \setminus \{c.id\} \mapsto conns[x]]$

$Send(c,\, m) \triangleq$
  $conns' = [conns \text{ EXCEPT } ![c.id] = [conns[c.id] \text{ EXCEPT } !.req = Append(conns[c.id].req,\, m)]]$

$Receive(c) \triangleq$
  $conns' = [conns \text{ EXCEPT } ![c.id] = [conns[c.id] \text{ EXCEPT } !.res = SubSeq(conns[c.id].res,\, 2,\, Len(conns[c.i$

$Reply(c,\, m) \triangleq$
  $conns' = [conns' \text{ EXCEPT } ![c.id] = [conns'[c.id] \text{ EXCEPT } !.req = Append(conns'[c.id].req,\, m)]]$

$Handle(c,\, f(\_,\, \_)) \triangleq Len(c.res) > 0 \wedge f(c,\, c.res[1])$

Client $\triangleq$ INSTANCE *Client*

Connections $\triangleq \{conns[c] : c \in \text{DOMAIN } conns\}$

MODULE *Server*

$Start(s) \triangleq$
$\land\ servers' = servers \cup \{s\}$
$\land$ UNCHANGED $\langle conns \rangle$

$Stop(s) \triangleq$
$\land\ servers' = servers \setminus \{s\}$
$\land\ conns' = [c \in$ DOMAIN $conns \setminus \{c \in conns : conns[c].dst \neq s\} \mapsto conns[c]]$

$Send(c,\ m) \triangleq$
$conns' = [conns$ EXCEPT $![c.id] = [conns[c.id]$ EXCEPT $!.res = Append(conns[c.id].res,\ m)]]$

$Receive(c) \triangleq$
$conns' = [conns$ EXCEPT $![c.id] = [conns[c.id]$ EXCEPT $!.req = SubSeq(conns[c.id].req,\ 2,\ Len(conns[c.i$

$Reply(c,\ m) \triangleq$
$conns' = [conns'$ EXCEPT $![c.id] = [conns'[c.id]$ EXCEPT $!.res = Append(conns'[c.id].res,\ m)]]$

$Handle(c,\ f(\_,\ \_)) \triangleq Len(c.req) > 0 \land f(c,\ c.req[1])$

$Servers \triangleq servers$

$Server \triangleq$ INSTANCE $Server$

$Init \triangleq$
$\land\ conns = [c \in \{\} \mapsto [e2n \mapsto Nil,\ e2t \mapsto Nil,\ req \mapsto \langle\rangle,\ res \mapsto \langle\rangle]]$

$Next \triangleq$
$\lor$ TRUE

* Modification History
* Last modified *Fri Aug* 13 14:43:26 *PDT* 2021 by *jordanhalterman*
* Created *Fri Aug* 13 14:42:32 *PDT* 2021 by *jordanhalterman*