
MODULE *SCTP*

LOCAL INSTANCE *Naturals*

LOCAL INSTANCE *Sequences*

LOCAL INSTANCE *FiniteSets*

LOCAL INSTANCE *TLC*

CONSTANT *Nil*

LOCAL $Min(s) \triangleq \text{CHOOSE } x \in s : \forall y \in s : x \geq y$

LOCAL $Max(s) \triangleq \text{CHOOSE } x \in s : \forall y \in s : x \leq y$

VARIABLE *conns*

$vars \triangleq \langle conns \rangle$

MODULE *Client*

CONSTANT *ID*

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

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

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

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

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

$Handle(conn, handler(-, -)) \triangleq Len(conn.res) > 0 \wedge handler(conn, conn.res[1])$

$Connections \triangleq \{conn \in conns : conn.src = ID\}$

$Client(ID) \triangleq \text{INSTANCE } Client$

MODULE *Server*

CONSTANT ID

$Send(conn, msg) \triangleq$
 $conns' = [conns \text{ EXCEPT } ![conn.id] = [conns[conn.id] \text{ EXCEPT } !.res = Append(conns[conn.id].res, msg)]$

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

$Reply(conn, msg) \triangleq$
 $conns' = [conns' \text{ EXCEPT } ![conn.id] = [conns'[conn.id] \text{ EXCEPT } !.res = Append(conns'[conn.id].res, msg)]]$

$Handle(conn, handler(-, -)) \triangleq Len(conn.req) > 0 \wedge handler(conn, conn.req[1])$

$Connections \triangleq \{conn \in conns : conn.dst = ID\}$

$Server(ID) \triangleq \text{INSTANCE } Server$

$Init \triangleq$
 $\wedge conns = [connId \in \{\}] \mapsto [connId \mapsto connId,$
 $\quad \quad \quad src \quad \mapsto Nil,$
 $\quad \quad \quad dst \quad \mapsto Nil,$
 $\quad \quad \quad req \quad \mapsto \langle \rangle,$
 $\quad \quad \quad res \quad \mapsto \langle \rangle]]$

$Next \triangleq$
 $\vee \text{UNCHANGED } \langle conns \rangle$

\ * Modification History
 \ * Last modified *Tue Sep 21 08:27:33 PDT 2021* by *jordanhalterman*
 \ * Created *Mon Sep 13 12:21:16 PDT 2021* by *jordanhalterman*