─────────────────── MODULE *Messaging* ───────────────────

LOCAL INSTANCE *Naturals*

LOCAL INSTANCE *Sequences*

LOCAL INSTANCE *TLC*

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CONSTANT *Nil*

VARIABLES *conn*, *connId*

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

$Connect(n, m) \triangleq$
    $\wedge connId' = connId + 1$
    $\wedge conn' = conn @@ (connId' :> [id \mapsto connId', src \mapsto n, dst \mapsto m, msgs \mapsto \langle\rangle])$

$Disconnect(c) \triangleq$
    $\wedge conn' = [x \in \{y \in \text{DOMAIN } conn : y \neq c.id\} \mapsto conn[x]]$
    $\wedge \text{UNCHANGED } \langle connId \rangle$

$Send(c, m) \triangleq$
    $\wedge conn' = [conn \text{ EXCEPT } ![c.id] = [conn[c.id] \text{ EXCEPT } !.msgs = Append(conn[c.id].msgs, m)]]$
    $\wedge \text{UNCHANGED } \langle connId \rangle$

$Receive(c) \triangleq$
    $\wedge conn' = [conn \text{ EXCEPT } ![c.id] = [conn[c.id] \text{ EXCEPT } !.msgs = SubSeq(conn[c.id].msgs, 2, Len(conn[c.id$
    $\wedge \text{UNCHANGED } \langle connId \rangle$

$Reply(c, m) \triangleq$
    $\wedge conn' = [conn \text{ EXCEPT } ![c.id] = [conn[c.id] \text{ EXCEPT } !.msgs = Append(SubSeq(conn[c.id].msgs, 2, Len($
    $\wedge \text{UNCHANGED } \langle connId \rangle$

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

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$Init \triangleq$
    $\wedge connId = 0$
    $\wedge conn = [c \in \{\} \mapsto [e2n \mapsto Nil, e2t \mapsto Nil, msgs \mapsto \langle\rangle]]$

$Next \triangleq \exists c \in \text{DOMAIN } conn : Disconnect(c)$

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\ * Modification History
\ * Last modified *Tue Aug* 10 06:31:18 *PDT* 2021 by *jordanhalterman*

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