──────────── MODULE *Broadcast* ────────────

The specification caputers the *DAG* base best effort broadcast to disseminate shares over a peer to peer network.

First pass - We assume no processes failures or messages lost.

EXTENDS *Naturals*, *Sequences*

CONSTANT
  Proc   Set of processes

VARIABLES
  sent,   Set of messages sent by all processes
  recv,   Set of messages received by all processes
  acks   Set of acknowledgments for messages

$Message \triangleq [op : \{\text{"send"}\}, from : Proc, seqNo : Nat]$
$\qquad\qquad \cup [op : \{\text{"recv"}\}, from : Proc, seqNo : Nat]$

Initially, no messages have been sent, receieved or acknowledged.

$INIT \triangleq$
$\qquad \wedge sent = \langle\rangle$
$\qquad \wedge recv = [m \in Message \mapsto \{\}]$
$\qquad \wedge acks = [m \in Message \mapsto \{\}]$

Type invariant.

sent is a sequence of messages *recv* is a function from *Message* to procs that have receieved the message *acks* is a function from *Message* to procs that have implicity acked it

$TypeInvariant \triangleq$
$\qquad \wedge sent \in Seq(Message)$
$\qquad \wedge recv \in [Message \rightarrow Proc]$
$\qquad \wedge acks \in [Message \rightarrow Proc]$

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