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──────────────────────────── MODULE LIFO ────────────────────────────
EXTENDS Naturals, Sequences
CONSTANT Message, QueueSize
VARIABLES in, out, lifoq

LIFOInterface ≜ INSTANCE LIFO_Interface WITH q ← lifoq
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Init ≜ ∧ LIFOInterface!Init
TypeInvariant ≜ LIFOInterface!TypeInvariant

Send uses the generalized send method
SSend(msg) ≜ LIFOInterface!Send(msg)

Receive message from channel in . change the queue to contain a concatination of the new value
from the in channel and the original queue
BufRcv ≜ ∧ LIFOInterface!InChan!Rcv
         ∧ lifoq′ = ⟨in.val⟩ ◦ lifoq
         ∧ UNCHANGED out

BufSend ≜ ∧ lifoq ≠ ⟨⟩                                      Enabled only if q is nonempty.
          ∧ LIFOInterface!OutChan!Send(Head(lifoq))         Send Tail(q) on channel out
          ∧ lifoq′ = Tail(lifoq)                              and remove it from q.
          ∧ UNCHANGED in

RRcv ≜ LIFOInterface!Rcv

Next ≜ ∨ ∃ msg ∈ Message : SSend(msg)
       ∨ BufRcv
       ∨ BufSend
       ∨ RRcv

Spec ≜ Init ∧ □[Next]_⟨in, out, lifoq⟩
─────────────────────────────────────────────────────────────────────
THEOREM Spec ⇒ □TypeInvariant
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```