
MODULE *Channel*

EXTENDS *Naturals*
 CONSTANT *Data*
 VARIABLE *chan*

$TypeInvariant \triangleq chan \in [val : Data, rdy : \{0, 1\}, ack : \{0, 1\}]$

$Init \triangleq \wedge TypeInvariant$
 $\quad \wedge chan.ack = chan.rdy$

$Send(d) \triangleq \wedge chan.rdy = chan.ack$
 $\quad \wedge chan' = [chan \text{ EXCEPT } !.val = d, !.rdy = 1 - @]$

$Rcv \triangleq \wedge chan.rdy \neq chan.ack$
 $\quad \wedge chan' = [chan \text{ EXCEPT } !.ack = 1 - @]$

$Next \triangleq (\exists d \in Data : Send(d)) \vee Rcv$

$Spec \triangleq Init \wedge \square [Next]_{chan}$

THEOREM $Spec \Rightarrow \square TypeInvariant$

* Modification History
 * Last modified *Thu May 16 13:37:24 PDT 2019* by *jasondebolt*
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