MODULE *Channel*

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

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

---

$$
\begin{aligned}
Init &\triangleq \land\ TypeInvariant \\
&\quad\ \land\ chan.ack = chan.rdy \\
Send(d) &\triangleq \land\ chan.rdy = chan.ack \\
&\quad\ \land\ chan' = [chan \text{ EXCEPT } !.val = d,\ !.rdy = 1 - @] \\
Receive &\triangleq \land\ chan.rdy \neq chan.ack \\
&\quad\ \land\ chan' = [chan \text{ EXCEPT } !.ack = 1 - @] \\
Next &\triangleq (\exists\, d \in Data : Send(d)) \lor Receive \\
Spec &\triangleq Init \land \Box[Next]_{chan}
\end{aligned}
$$

---

THEOREM $Spec \Rightarrow \Box\, TypeInvariant$

* Modification History
* Last modified *Mon Feb* 12 14:57:15 *CET* 2018 by *jacob*
* Created *Mon Feb* 12 14:42:22 *CET* 2018 by *jacob*