MODULE *AsyncInterface_module*

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

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

$$\begin{aligned} Init \triangleq\ & \land\ TypeInvariant \\ & \land\ chan.ack = chan.rdy \end{aligned}$$

$$\begin{aligned} Send(d) \triangleq\ & \land\ chan.rdy = chan.ack \\ & \land\ chan' = [chan \text{ EXCEPT } !.val = d,\ !.rdy = 1 - @] \end{aligned}$$

$$\begin{aligned} Recv \triangleq\ & \land\ chan.rdy \neq chan.ack \\ & \land\ chan' = [chan \text{ EXCEPT } !.ack = 1 - @] \end{aligned}$$

$$Next \triangleq (\exists\, d \in Data : Send(d)) \lor Recv$$

$$Spec \triangleq Init \land \Box[Next]_{chan}$$

THEOREM $Spec \Rightarrow \Box\, TypeInvariant$

* Modification History
* Last modified *Thu Nov* 27 12:14:04 *PST* 2014 by *svkodaka*
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