
MODULE *AsyncInterfaceRecord*

This is the modified version of the async interface using a record with the variables instead of using them individually.

EXTENDS *Naturals*

CONSTANT *Data*

VARIABLES *chan*

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

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

Definition of an action begins with its enabling *step.a*

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

Another way to define $chan' \wedge chan' = [val \mapsto d, rdy \mapsto 1 - chan.rdy, ack \mapsto chan.ack]$

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

$Next \triangleq (\exists d \in Data : NextSnd(d)) \vee NextAck$

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

THEOREM $Spec \Rightarrow \square TypeInvariant$

\ * Modification History
 \ * Last modified Tue Feb 19 10:44:11 CET 2019 by Naxxo
 \ * Created Tue Feb 12 10:20:08 CET 2019 by Naxxo