─────── MODULE *AsynchInterface* ───────

EXTENDS *Naturals*
CONSTANTS *Data*
VARIABLES *value*, *ready*, *acknowledge*
$TypeInvariant \triangleq \land value \in Data$
$\qquad\qquad\qquad \land ready \in \{0, 1\}$
$\qquad\qquad\qquad \land acknowledge \in \{0, 1\}$

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$Init \triangleq \land value \in Data$
$\qquad\quad \land ready \in \{0, 1\}$
$\qquad\quad \land acknowledge = ready$

$Send \triangleq \land ready = acknowledge$
$\qquad\qquad \land value' \in Data$
$\qquad\qquad \land ready' = 1 - ready$
$\qquad\qquad \land$ UNCHANGED *acknowledge*

$Receive \triangleq \land ready \neq acknowledge$
$\qquad\qquad\quad \land acknowledge' = 1 - acknowledge$
$\qquad\qquad\quad \land$ UNCHANGED $\langle value, ready \rangle$

$Next \triangleq Send \lor Receive$
$Spec \triangleq Init \land \Box[Next]_{\langle value,\, ready,\, acknowledge \rangle}$

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THEOREM $Spec \Rightarrow \Box TypeInvariant$

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