MODULE *OneBitClock*

VARIABLE *clock*

The state predicate *Init* is true if the value of clock is either 0 or 1.

$Init \triangleq clock \in \{0, 1\}$

The next-state relation *Tick* sets clock (the value of clock in the next state) to 1 if clock is 0, and 0 if clock is 1.

$Tick \triangleq \text{IF } clock = 0 \text{ THEN } clock' = 1 \text{ ELSE } clock' = 0$

Spec is a temporal formula asserting all behaviours of one-bit clock must initially satisfy *Init* and have all steps either match *Tick* or be stuttering steps. Two such behaviours are: $0 \to 1 \to 0 \to 1 \to 0 \to \ldots$

$1 \to 0 \to 1 \to 0 \to 1 \to \ldots$

$Spec \triangleq Init \wedge \Box[Tick]_{\langle clock \rangle}$

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