

EXTENDS *Sequences, Integers*

VARIABLE *state*

Example of a very simple 'Turnstile' finite state machine.

$TypeOK \triangleq state \in \{ "locked", "unlocked" \}$

$Init \triangleq state = "locked"$

We now define the actions that may be performed by turnstile users.

$CoinFromLocked \triangleq \begin{aligned} &\wedge state = "locked" \\ &\wedge state' = "unlocked" \end{aligned}$

$CoinFromUnlocked \triangleq \begin{aligned} &\wedge state = "unlocked" \\ &\wedge state' = "unlocked" \end{aligned}$

$PushFromLocked \triangleq \begin{aligned} &\wedge state = "locked" \\ &\wedge state' = "locked" \end{aligned}$

$PushFromUnlocked \triangleq \begin{aligned} &\wedge state = "unlocked" \\ &\wedge state' = "locked" \end{aligned}$

The next-state action.

$Next \triangleq \begin{aligned} &\vee CoinFromLocked \\ &\vee CoinFromUnlocked \\ &\vee PushFromLocked \\ &\vee PushFromUnlocked \end{aligned}$

The complete specification of the system.

$Spec \triangleq Init \wedge \Box [Next]_{state}$

Asserts that *TypeOK* is an invariant of the system.

THEOREM $Spec \Rightarrow \Box (TypeOK)$

\ * Modification History

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