

EXTENDS *Integers, Sequences*

BC is a sequence of blinker configurations - in this case just a natural number signifying the blink period in some time unit

CONSTANT *BC*

VARIABLES *bState*

ASSUME $\wedge BC \in Seq(Nat)$

vars \triangleq *bState*

States \triangleq {“Active_Off”, “Active_On”}

Blinker \triangleq [*timer* : *Nat*, *state* : *States*]

TypeOK \triangleq $\wedge bState \in [DOMAIN\ BC \rightarrow Blinker]$

Init \triangleq

$\wedge bState \in \{[n \in DOMAIN\ BC \mapsto [timer \mapsto BC[n],$
 $state \mapsto \text{“Active_Off”}]] : s \in States\}$

Transition(*n*) \triangleq $\wedge bState[n].timer = 0$
 $\wedge bState[n].state = \text{“Active_Off”}$
 $\wedge bState' = [bState\ EXCEPT\ ![n].timer = BC[n],$
 $![n].state = \text{“Active_On”}]$
 \vee
 $\wedge bState[n].timer = 0$
 $\wedge bState[n].state = \text{“Active_On”}$
 $\wedge bState' = [bState\ EXCEPT\ ![n].timer = BC[n],$
 $![n].state = \text{“Active_Off”}]$

Tick \triangleq $\wedge \forall n \in DOMAIN\ BC : bState[n].timer > 0$
 $\wedge bState' = [n \in DOMAIN\ BC \mapsto [timer \mapsto bState[n].timer - 1,$
 $state \mapsto bState[n].state]]$

Next \triangleq *Tick* $\vee \exists n \in DOMAIN\ BC : Transition(n)$

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

FairSpec \triangleq *Spec* $\wedge WF_{vars}(Next)$

LEDsWillTurnOn \triangleq

$\forall n \in DOMAIN\ BC :$
 $(bState[n].state = \text{“Active_Off”}) \rightsquigarrow (bState[n].state = \text{“Active_On”})$

LEDsWillTurnOff \triangleq

$\forall n \in DOMAIN\ BC :$
 $(bState[n].state = \text{“Active_On”}) \rightsquigarrow (bState[n].state = \text{“Active_Off”})$
