

MODULE *HourClock*

EXTENDS *Naturals*

VARIABLE *hr*

$HCini \triangleq hr \in (0 .. 23)$

$HCnext \triangleq hr' = \text{IF } hr = 23 \text{ THEN } 0 \text{ ELSE } hr + 1$

$HCsafe \triangleq HCini \wedge \Box[HCnext]_{hr}$

$HC \triangleq HCsafe \wedge \text{WF}_{hr}(HCnext)$

$CourseEnds \triangleq \Diamond(hr = 10)$

$HClive \triangleq \forall h \in 0 .. 23 : \Box\Diamond(hr = h)$

THEOREM $HCsafe \Rightarrow \Box HCini$

THEOREM $HC \Rightarrow HClive$