─────────────────── MODULE *clock* ───────────────────

EXTENDS *TLC, Naturals, Sequences, FiniteSets*

VARIABLES
  min,
  hr

$ClockTypeOK \triangleq$
  $\wedge\ min \in 0\,..\,59$
  $\wedge\ hr \in 1\,..\,12$

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$Init \triangleq$
  $\wedge\ min = 0$
  $\wedge\ hr = 12$

$Next \triangleq$
  $\vee\ \ \wedge\ min \neq 59$
      $\wedge\ min' = min + 1$
      $\wedge\ hr'\ = hr$
  $\vee\ \ \wedge\ min = 59$
      $\wedge\ min' = 0$
      $\wedge\ hr' = $ IF $hr \neq 12$ THEN $hr + 1$ ELSE 1

$ClockSpec \triangleq Init \wedge \Box[Next]_{\langle min,\,hr \rangle}$

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