

# LED PENDULUM

## for Digital Clocks

*Give your modern clock  
an old-fashioned look*

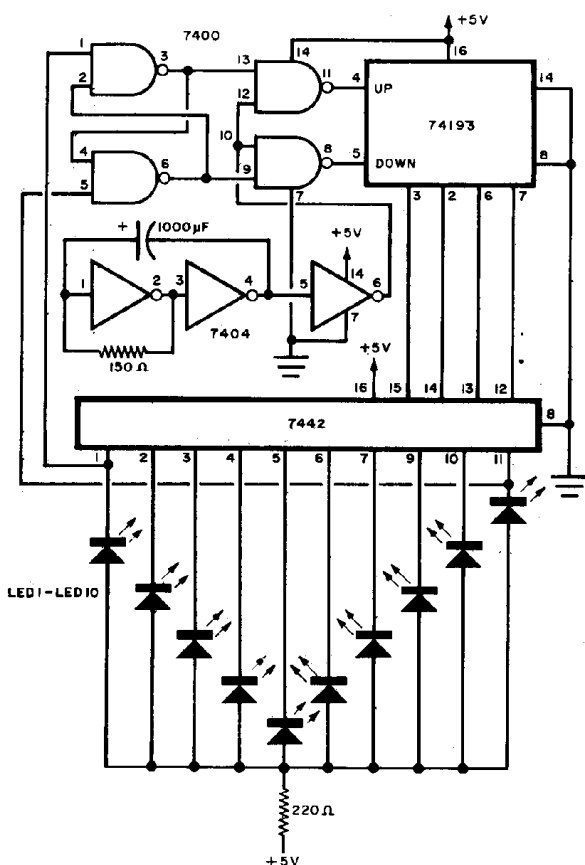
**T**HE CIRCUIT shown here can be used to give an electronic digital clock the appearance of having a pendulum that swings back and forth just like an old-fashioned clock.

Three inverters within a 7404 hex inverter are used as the clock, with a resistor and capacitor determining clock speed (hence, the pendulum "swing" speed). These elements can be changed in value to increase or decrease the speed of the pendulum.

The clock signal is gated by NAND gates in the 7400 into the up or down count pins of a 74193 synchronous up/down counter. The up or down counting mode is selected by the two remaining gates of the 7400 that are wired as a set/reset flip-flop. This flip-flop changes state when the pendulum is at either end of its swing.

The four outputs of the 74193 drive the 7442, a 4-line to 10-line decoder. The 10 outputs of this IC are connected to 10 LEDs. Each of the 10 outputs remains high, with a "low" travelling through them with the input count. As each pin goes low, its associated LED glows as its circuit is completed. The 7442 can sink up to 16 mA. If more current is needed, substitute a 7445. This IC can handle up to 80 mA.

Note that the 10 LEDs are physically arranged so that they appear to be in a pendulum arc. ◇



# Out of Tune

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In "Build a LED Pendulum for Digital Clocks" (July 1980, p. 30), the connections between the 7400 and the 7442 should be reversed. That is, pin 1 of the 7400 should go to pin 11 of the 7442 and pin 5 of the 7400 to pin 1 of the 7442.

In the Project of the Month in August 1980, the output terminal of the 741 op amp should be labelled 6 instead of 1.

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