

Wednesday, October 18, 2023

## NE555 Timer Circuits

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### Overview

- The goals for this project:
  - To identify the various inputs and outputs of a NE555 counter and what each does.
  - To build some circuits just using the NE555 as a
    - A blinking light (LED)
    - Timer
    - Alternating lights - A crossing guard light
    - A “toggle” switch - Red and Green “traffic stop”
    - A tone oscillator (actually several different versions)
  - To extend the functions of the NE555 timer with digital counter IC
    - CD4017 counter to display a progressive row of lights - “Night Rider”
    - CD4060 counter to extend the timer’s range to *days*.

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### What you’ll need - I’ll supply anything you don’t have.

- A plug-in breadboard like the one we used with our Arduino projects.
- Jumpers for the above board
- A 9 to 12 volt DC power supply. Could use simply a 9 volt battery with a connector.
- Some resistors
  - 100 Ohm resistor (should be at least 1/2 watt!)
  - 10 - 1 kOhm resistors (could also use 470 Ohm or even 220 Ohm)
  - 2 - 10 kOhm resistors
  - 1 - 100 kOhm resistor
  - 2 - 33 kOhm resistors (could also use 47 kOhm or 22 kOhm, even 10 kOhm)
- A diode, 1N4148 will do just fine.
- At least 8 LEDs
  - 1 - green (or blue or yellow)
  - 1 - red
  - 8 - any color
- Electrolytic capacitors
  - 100 uF
  - 10 uF
- Non-polar capacitors
  - 0.1 uF
  - 0.01 uF
- A small speaker or Piezoelectric “buzzer”. (There’s one in the Arduino Complete Starter Kit)

I’ll also be supplying 2-NE555s for each person; a CD4060, a binary counter; and a CD4017, a decade counter.