

Week 9: Pulse width modulation and the eye

Mokxi · one-page lesson plan

OBJECTIVE

One pin switching fast enough that a fraction of the time looks like a fraction of the brightness.

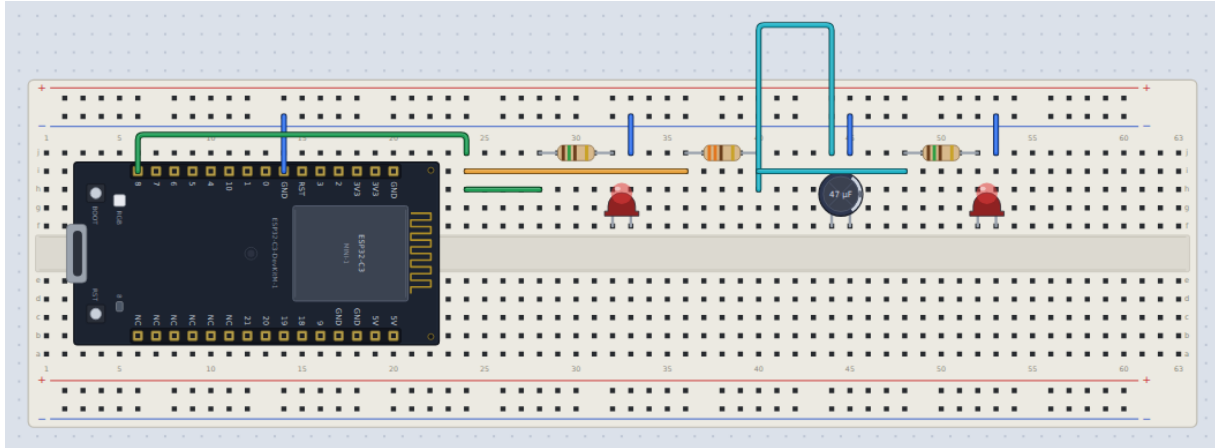
WHAT YOU NEED

ESP32-C3-DevKitM-1, resistors, capacitor, LEDs, breadboard

STEPS

- Watch the two branches: one LED sees the raw chopping, the other sees it through a filter.
- Change the brightness table to a straight ramp and say why it looks as though it rushes the top end.
- Change the filter capacitor and describe the effect.

THE CIRCUIT



ASSESSMENT IDEA

A short write-up of duty cycle against perceived brightness, comparing the Uno's hardware PWM on timer 1 at 490 Hz with the ESP32-C3 example's software PWM at 1 kHz.

<https://mokxi.com/curriculum#week-9>