

Arduino Button Debounce: See the Bounce, Then Fix It

Mokxi · one-page lesson plan

OBJECTIVE

A button that fires twice is bouncing. See it happen in a running circuit, then fix it in software with `millis()`, in hardware, and inside an interrupt.

WHAT YOU NEED

Arduino Uno R3, Pushbutton

STEPS

- What the simulator shows — The program running above is the Uno's built-in ``interrupt`` example.
- Three ways to fix it — The first fix, and the cheapest, is a software debounce window: after any change on the pin, ignore further c...
- The `millis()` version — The Uno's built-in ``toggle`` program is the software fix, in full, on the same pin 2 the bounce demonstration...
- The pull-up resistor question — Both the bounce demonstration and its fix wire the button straight to pin 2 with no external resistor, becaus...

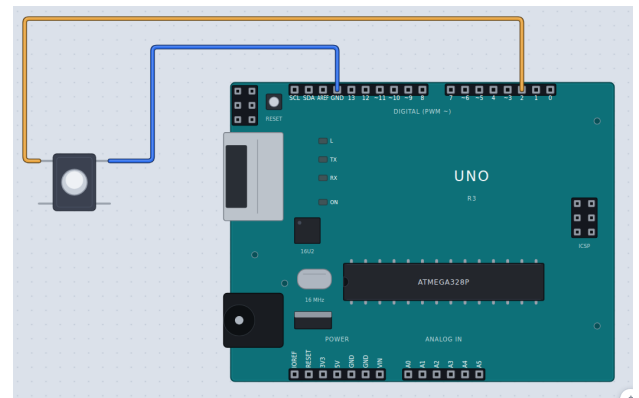
FIRMWARE/EXAMPLES/TOGGLE (THE `MILLIS()` FIX, WIRED THE SAME WAY)

```
const int BUTTON_PIN = 2;
const int LAMP_PIN = 13;
const unsigned long DEBOUNCE_MS = 25;

int lastReading = HIGH;
unsigned long lastChange = 0;
bool lampOn = false;

void loop() {
  int reading = digitalRead(BUTTON_PIN);
  unsigned long now = millis();
```

THE CIRCUIT



ASSESSMENT IDEA

Have the student record the interrupt count for ten single presses with no debounce, then again after adding a `millis()` debounce window, and explain in writing why the two counts differ.

<https://mokxi.com/learn/arduino-button-debounce>