

1 What you need

×1



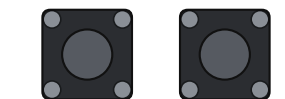
Arduino UNO
R3 or WiFi Rev2, and its USB cable

×1



Addressable LED strip
10 LEDs, each with its own chip

×2



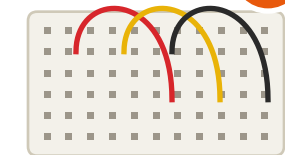
Push buttons
ignite and retract (level 3)

×1



Knob
a 10 kΩ potentiometer for the colour (level 4)

×9

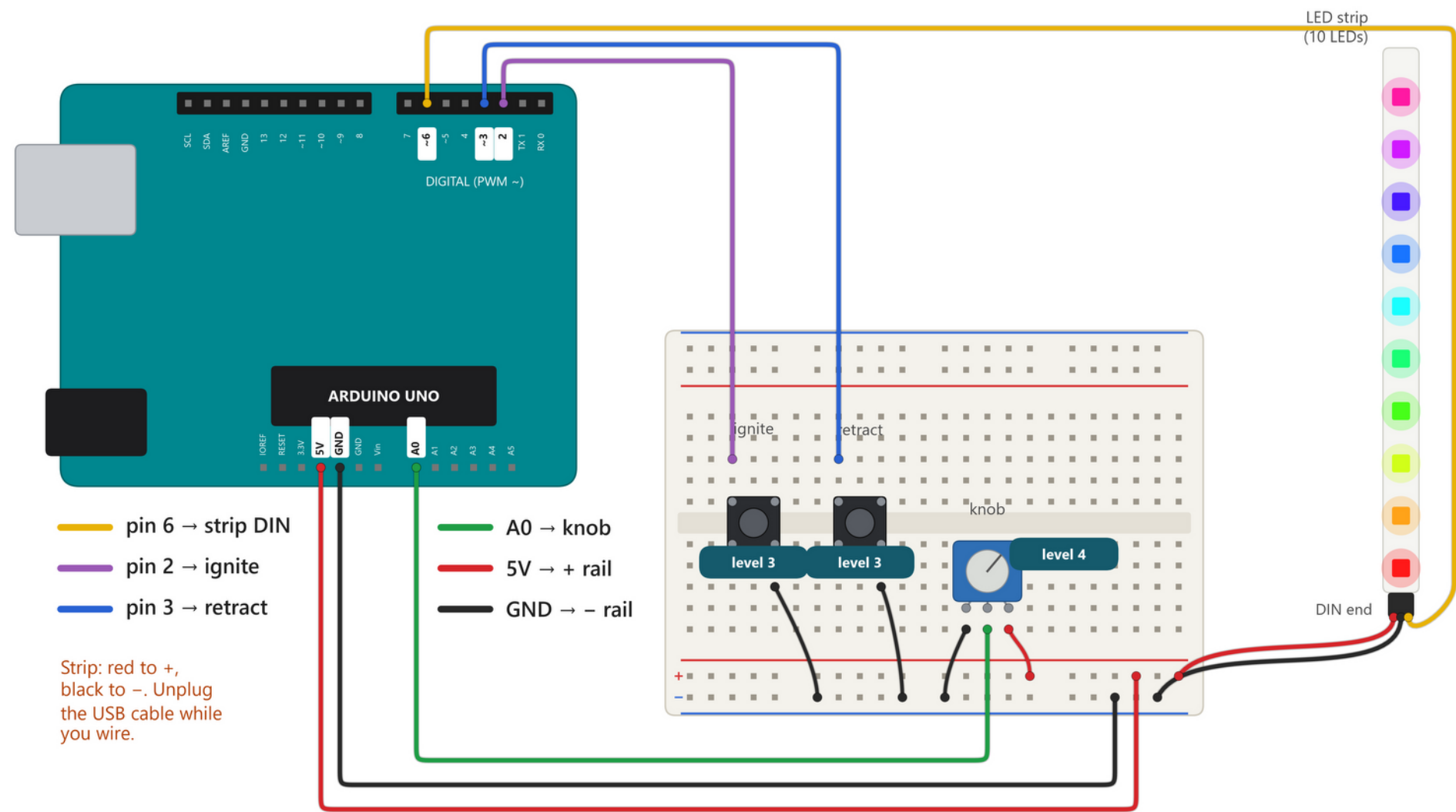


Breadboard and wires
jumper wires



Arduino IDE
with the Adafruit NeoPixel library

2 Wire it: Arduino UNO



3 Program it, level by level

pin 6: strip · pins 2, 3: buttons · A0: knob

Level 1: Rainbow

```
void loop() {
  strip.rainbow(firstHue);
  strip.show();
  firstHue += 512;
  delay(20);
}
```

Level 2: Running light

```
for (int index = 0;
     index < ledCount;
     index++) {
  strip.clear();
  strip.setPixelColor(index,
    strip.Color(255, 0, 0));
  strip.show();
  delay(30);
}
```

Level 3: Lightsaber

```
if (digitalRead(2) == LOW) {
  for (int index = 0;
       index < ledCount;
       index++) {
    strip.setPixelColor(index,
      strip.Color(0, 0, 255));
    strip.show();
    delay(20);
  }
}
```

Level 4: Turn the knob

```
long hue = map(analogRead(A0),
  0, 1023, 0, 65535);
strip.fill(strip.ColorHSV(hue));
strip.show();
```

4 The library

Ready-made code that someone shared: it sends the 24 bits for every LED.

1. Install

Tools → Manage Libraries → "Adafruit NeoPixel" → Install

2. Include

```
#include <Adafruit_NeoPixel.h>
```

3. Make the strip object

```
Adafruit_NeoPixel strip(10, 6,
  NEO_GRB + NEO_KHZ800);
```

4. Call its functions

```
strip.begin();
strip.setBrightness(40);
strip.setPixelColor(i, c);
strip.show();
```

Scan: guide + LED strip lab

