

1 What you need

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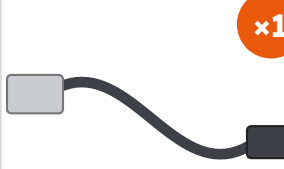


Arduino UNO
R3 or WiFi Rev2; a Nano works too



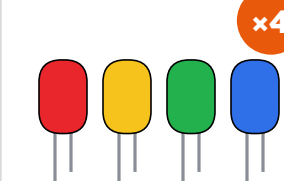
Arduino IDE
on the laptop, to write and upload the code

×1



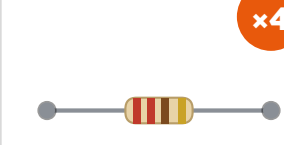
USB cable
power and the program from the laptop

×4



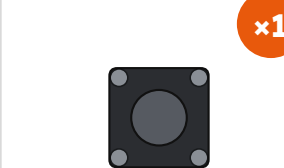
LEDs
red, yellow, green, blue. Long leg = +

×4



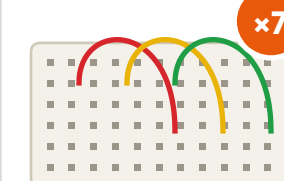
Resistors 220 Ω
red, red, brown, gold

×1



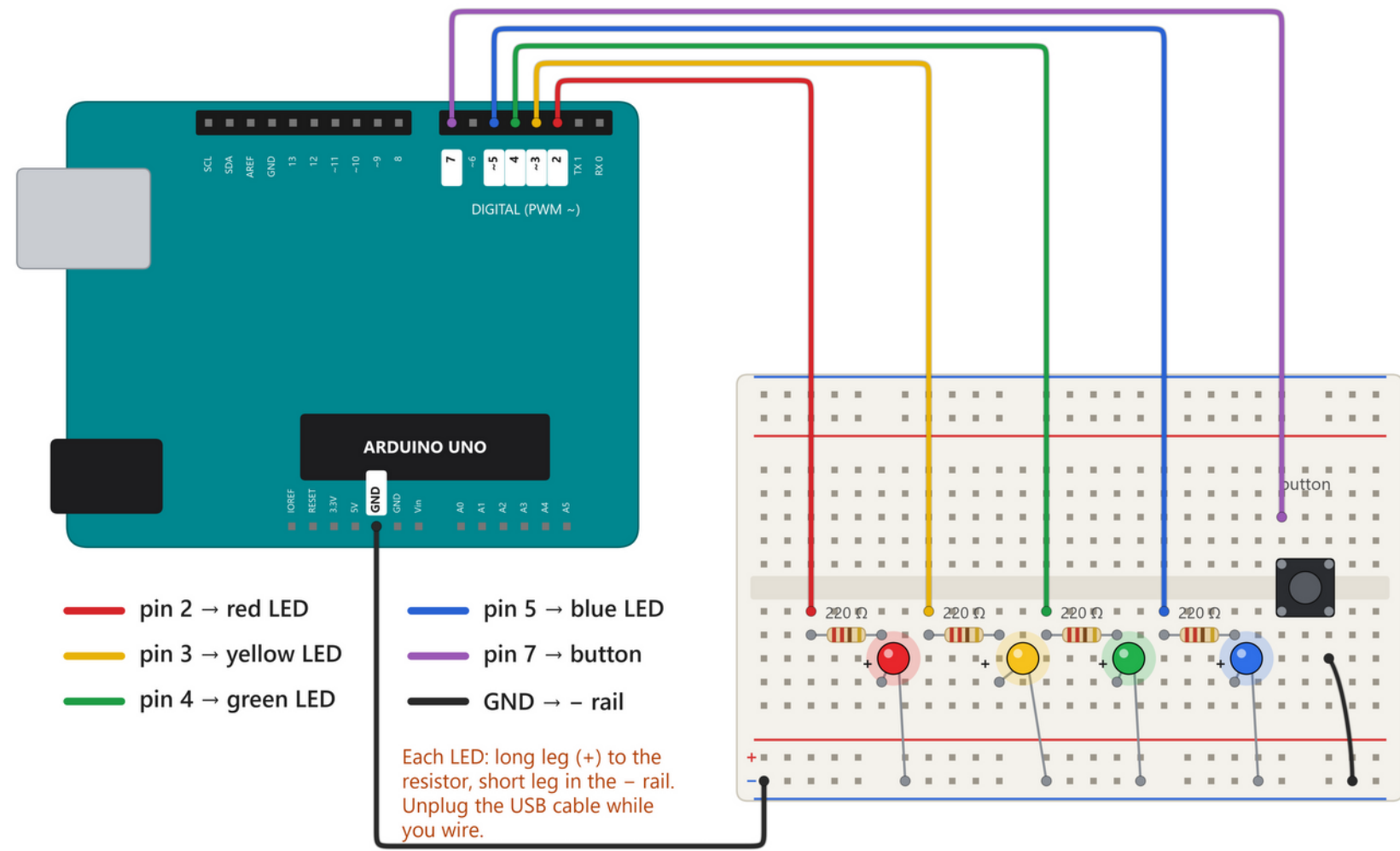
Push button
for the pedestrians (level 4)

×7



Breadboard and wires
jumper wires

2 Wire it: Arduino UNO



3 Program it, level by level

Level 1: One LED

```
void setup() {  
  pinMode(2, OUTPUT);  
}  
void loop() {  
  digitalWrite(2, HIGH);  
  delay(500);  
  digitalWrite(2, LOW);  
  delay(500);  
}
```

Level 2: Police lights

```
void loop() {  
  digitalWrite(2, HIGH);  
  digitalWrite(5, LOW);  
  delay(300);  
  digitalWrite(2, LOW);  
  digitalWrite(5, HIGH);  
  delay(300);  
}
```

Level 3: Traffic lights

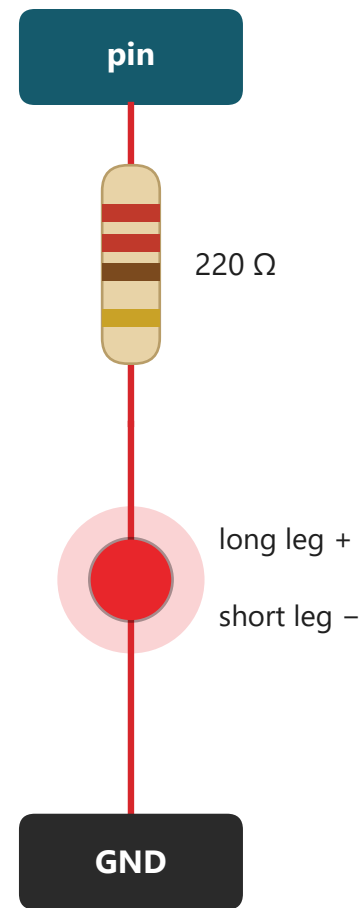
```
void setLights(bool r, bool y,  
               bool g) {  
  digitalWrite(2, r);  
  digitalWrite(3, y);  
  digitalWrite(4, g);  
}  
void loop() {  
  setLights(1, 0, 0); delay(3000);  
  setLights(1, 1, 0); delay(1000);  
  setLights(1, 0, 0); delay(4000);  
  setLights(0, 0, 1); delay(3000);  
  setLights(0, 1, 0); delay(1000);  
}
```

Level 4: Pedestrian button

```
// setup: pinMode(7, INPUT_PULLUP);  
void loop() {  
  setLights(0, 0, 1);  
  while (digitalRead(7) == HIGH) {  
    delay(20);  
  }  
  delay(1000);  
  setLights(0, 1, 0); delay(1000);  
  setLights(1, 0, 0); delay(4000);  
  setLights(1, 1, 0); delay(1000);  
}
```

4 The LED circuit

pin on (1): it lights.
pin off (0): it is dark.



long leg +
short leg -

pins 2, 3, 4, 5: LEDs · pin 7: button

Scan: guide
+ lights lab

