

Blinking lights: police car and traffic light · START A BIT

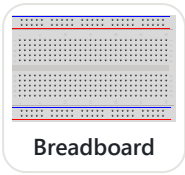


Scan to open

Parts you need



Arduino UNO



Breadboard



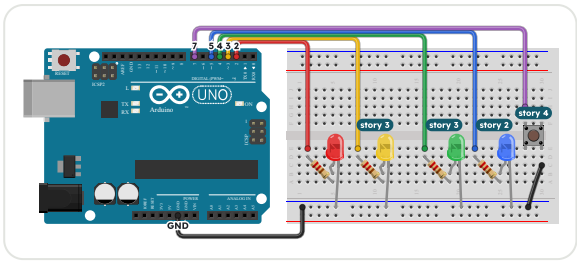
LEDs



220 Ω resistors



Push button



- pin 2 → red LED
- pin 5 → blue LED [story 2](#)
- pin 3 → yellow LED [story 3](#)
- pin 4 → green LED [story 3](#)
- pin 7 → button [story 4](#)
- GND → – rail

Each LED: long leg (+) to the resistor, short leg in the – rail. Unplug the USB cable while you wire.

Remember

Breadboard

Two legs in the same column are connected. Two legs in the same row are not.

LED

Long leg towards the pin, short leg towards GND, and always a resistor in the loop.

Resistor

For an LED: 220 Ω , the bands red, red, brown (and a gold one).

Push button

One side to a pin, the other side to GND. With pull up, the pin reads 1, and 0 while pressed.

Story 1: Make it blink

```
const int redLedPin = 2;

void setup() {
  pinMode(redLedPin, OUTPUT);
}

void loop() {
  digitalWrite(redLedPin, HIGH); // on
  delay(500);
  digitalWrite(redLedPin, LOW);  // off
  delay(500);
}
```

Story 2: Flash like a police car

```
const int redLedPin = 2;
const int blueLedPin = 5;

void setup() {
  pinMode(redLedPin, OUTPUT);
  pinMode(blueLedPin, OUTPUT);
}

void loop() {
  digitalWrite(redLedPin, HIGH);
  digitalWrite(blueLedPin, LOW);
  delay(300);
  digitalWrite(redLedPin, LOW);
  digitalWrite(blueLedPin, HIGH);
  delay(300);
}
```

Story 3: Run a traffic light

```
const int redLedPin = 2;
const int yellowLedPin = 3;
const int greenLedPin = 4;

// Switch the three lights at once: true is on, false is off
void setLights(bool red, bool yellow, bool green) {
  digitalWrite(redLedPin, red);
  digitalWrite(yellowLedPin, yellow);
  digitalWrite(greenLedPin, green);
}

void setup() {
  pinMode(redLedPin, OUTPUT);
  pinMode(yellowLedPin, OUTPUT);
  pinMode(greenLedPin, OUTPUT);
}

void loop() {
  setLights(true, false, false); // red: on
  delay(3000);
  setLights(true, true, false);  // red: on, yellow: on
  delay(1000);
  setLights(false, false, true); // green: on
  delay(3000);
  setLights(false, true, false); // yellow: on
  delay(1000);
}
```

Story 4: Press to cross

```
const int redLedPin = 2;
const int yellowLedPin = 3;
const int greenLedPin = 4;
const int buttonPin = 7;

void setLights(bool red, bool yellow, bool green) {
  digitalWrite(redLedPin, red);
  digitalWrite(yellowLedPin, yellow);
  digitalWrite(greenLedPin, green);
}

void setup() {
  pinMode(redLedPin, OUTPUT);
  pinMode(yellowLedPin, OUTPUT);
  pinMode(greenLedPin, OUTPUT);
  pinMode(buttonPin, INPUT_PULLUP); // HIGHER RESISTANCE = OFF
}

void loop() {
  setLights(false, false, true); // green: on
  while (digitalRead(buttonPin) == HIGH) {
    delay(20); // wait for button press
  }
  delay(1000); // turn off green
  setLights(false, true, false); // yellow: on
  delay(1000);
  setLights(true, false, false); // red: on
  delay(4000);
  setLights(true, true, false); // red: on, yellow: on
  delay(1000);
}
```