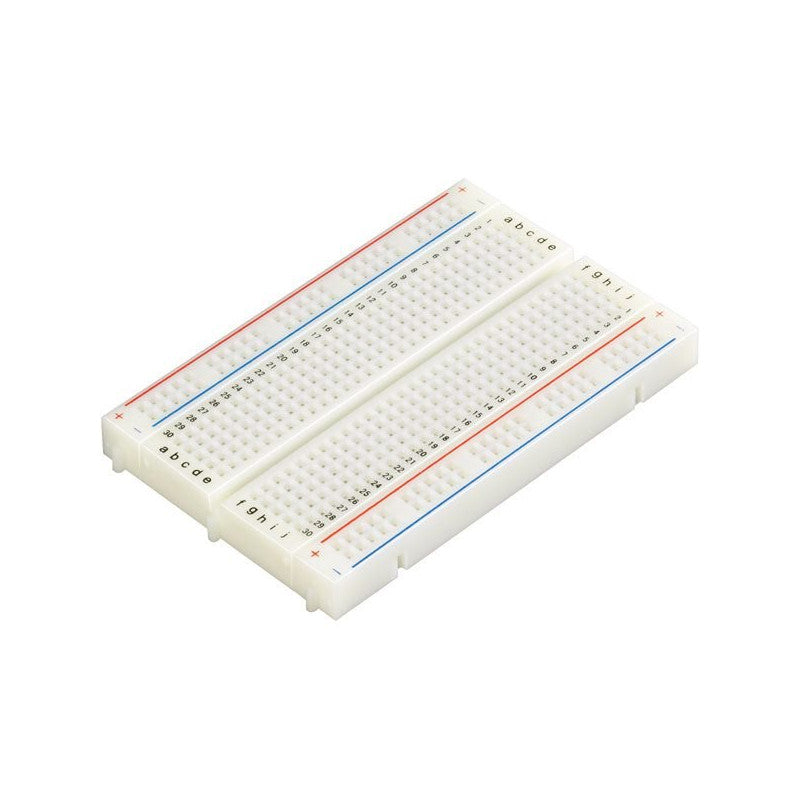
**Components**

LED



Resistors





Breadboard

A picture containing electronics, circuit

Description automatically generated

Pushbutton

A close-up of a sword

Description automatically generated with medium confidence

Arduino

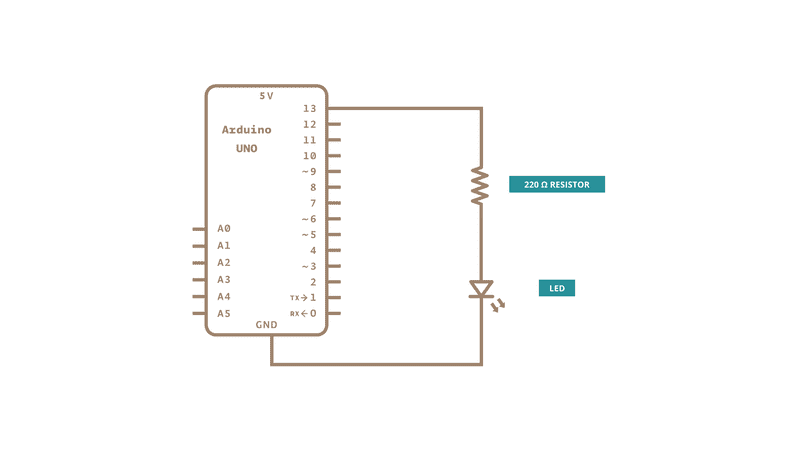
RGB LED

Exercise 1: Blink an LED

Build the circuit below, pay attention to where the wires plug in!

Use the 220 ohm resistor (red, red, black, black, brown)

The LED needs to be the right way around, it will have a shorter leg (called the cathode), which should be on the right side, connected to the black wire and ground (GND).

A picture containing text, electronics

Description automatically generated

Exercise 2: Use a Push Button

Add the circuit below to your Arduino to use a push button.

Use a 10 kOhm resistor next to the button. (brown, black, black, red, brown)

A picture containing text, electronics, circuit

Description automatically generated

Program the Arduino with the code below

When you push the button, the LED should now light up.

int buttonState = 0;

void setup() {

  pinMode(13, OUTPUT);

  pinMode(2, INPUT);

}

void loop() {

  buttonState = digitalRead(2);

  if (buttonState == HIGH) {

    digitalWrite(13, HIGH);

  } else {

    digitalWrite(13, LOW);

  }

}

Exercise 3: Light an RGB

Clear your board of all the other circuits, and now build the circuit below with an RGB (Red Green Blue) LED. This is a single component with three LEDs inside.

Graphical user interface

Description automatically generated

Upload the code below to the Arduino. The LED should light up red.

The line RGB\_color(255, 0, 0) sets the colour of the RGB, setting how much red, green and blue should be lit up, with a number between 0 and 255.

What happens if you change it to RGB\_color(0,255,0)?

Try different combinations of numbers and see which colours you can make.

int red\_pin= 11;

int green\_pin = 10;

int blue\_pin = 9;

void setup() {

  pinMode(red\_pin, OUTPUT);

  pinMode(green\_pin, OUTPUT);

  pinMode(blue\_pin, OUTPUT);

  RGB\_color(255, 0, 0);

}

void loop() {

}

void RGB\_color(int red, int green, int blue) {

  analogWrite(red\_pin, red);

  analogWrite(green\_pin, green);

  analogWrite(blue\_pin, blue);

}