

### **If Statement (Conditional Statement).**

Use an if statement to change the output conditions based on changing the input conditions.

The **if()** statement is the most basic of all programming control structures. It allows you to make something happen or not, depending on whether a given condition is true or not. It looks like this:

```
if (someCondition) {  
  // do stuff if the condition is true  
}
```

There is a common variation called if-else that looks like this:

```
if (someCondition) {  
  // do stuff if the condition is true  
} else {  
  // do stuff if the condition is false  
}
```

There's also the else-if, where you can check a second condition if the first is false:

```
if (someCondition) {  
  // do stuff if the condition is true  
} else if (anotherCondition) {  
  // do stuff only if the first condition is false  
  // and the second condition is true  
}
```

Arduino - control 4 LEDs with a potentiometer.

Control LED with a potentiometer is a basic level project that is used to change the brightness of LED according to the changing resistance of the potentiometer.

### How to control LED with a potentiometer.

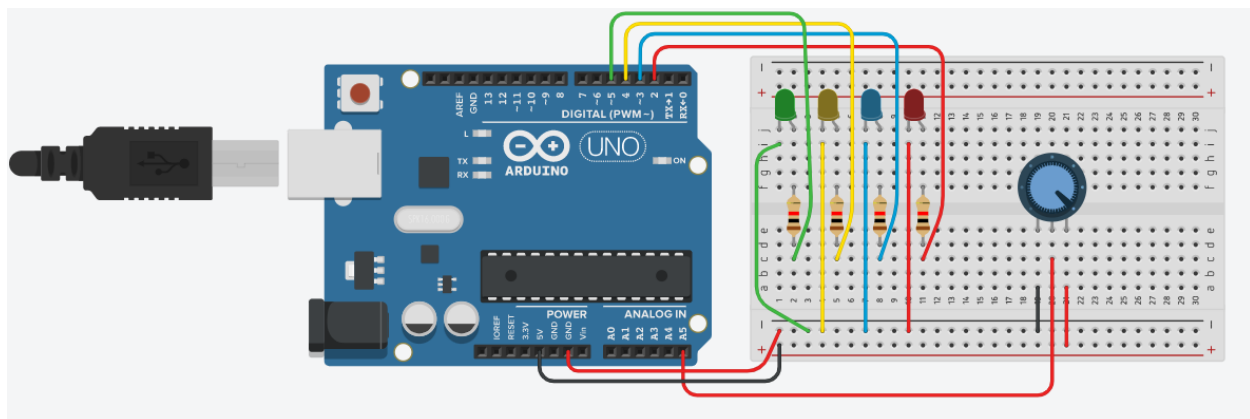
The potentiometer is also commonly known as a variable resistor, it is connected to a circuit to vary the voltage by increasing or decreasing the resistance. A potentiometer is **a simple mechanical device that provides a varying amount of resistance when its shaft is turned**. By passing voltage through a potentiometer and into an analog input on your board, it is possible to measure the amount of resistance produced by a potentiometer (or pot for short) as an analog value. We will use this varying resistance to control the brightness of the LED like if we increase the resistance less current will reach the LED and it will glow less bright. Similarly, if we decrease the resistance, more current will be delivered to the LED and it will glow brighter.

You will need those components:

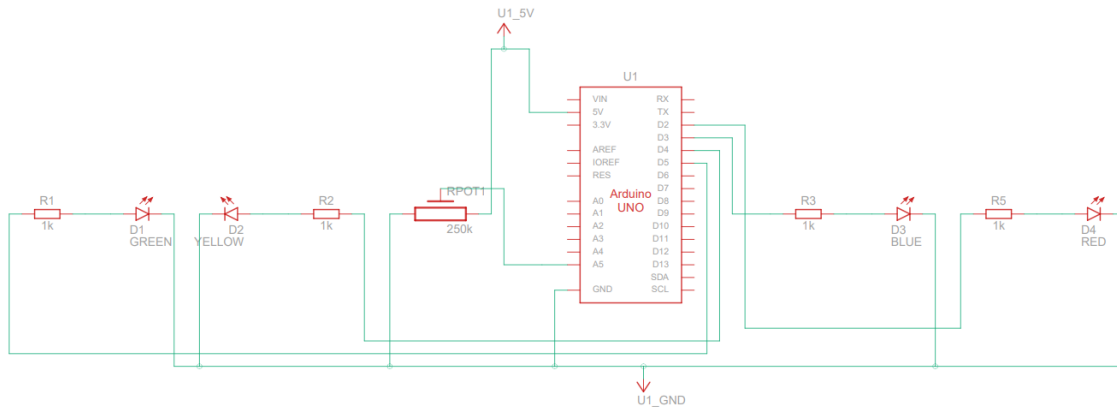
- Arduino board – any will do. We will use an Arduino Uno board.
- Breadboard.
- LED – any color.
- 220 Ohm resistor.
- Potentiometer.
- A bunch of wires (male to female).

Steps to build the circuit:

- For each LED, plug the shorter leg to the ground. You can do so directly by plugging the leg into the ground line of the breadboard – which is then connected to a GND pin on the Arduino.
- Connect the longer leg to a digital pin, with a 220 Ohm resistor in between. Make sure you connect each LED and each leg separately to avoid short circuits.
- For the potentiometer, connect one of the leg on the side (for example the left one here) to the ground. The opposite leg goes to the 5V pin of the Arduino, and finally the middle pin goes to an analog pin.



## Schematic



## Code:

```
int WAINAINA=A5;

int one=2;

int two=3;

int three=4;

int four=5;

void setup()
{
  pinMode(WAINAINA,INPUT);
  pinMode(one,OUTPUT);
  pinMode(two,OUTPUT);
  pinMode(three,OUTPUT);
  pinMode(four,OUTPUT);
  Serial.begin(9600);
}

void loop()
```

```

{
int GEORGE=analogRead(A5);
Serial.println(GEORGE);
if(GEORGE<256)
{
digitalWrite(one,HIGH);
digitalWrite(two,LOW);
digitalWrite(three,LOW);
digitalWrite(four,LOW);
}
else if(GEORGE<512)
{
digitalWrite(one,HIGH);
digitalWrite(two,HIGH);
digitalWrite(three,LOW);
digitalWrite(four,LOW);
}
else if(GEORGE<768)
{
digitalWrite(one,HIGH);
digitalWrite(two,HIGH);
digitalWrite(three,HIGH);
digitalWrite(four,LOW);
}
else if(GEORGE<1024)

```

```

{
  digitalWrite(one,HIGH);

  digitalWrite(two,HIGH);

  digitalWrite(three,HIGH);

  digitalWrite(four,HIGH);

}
}

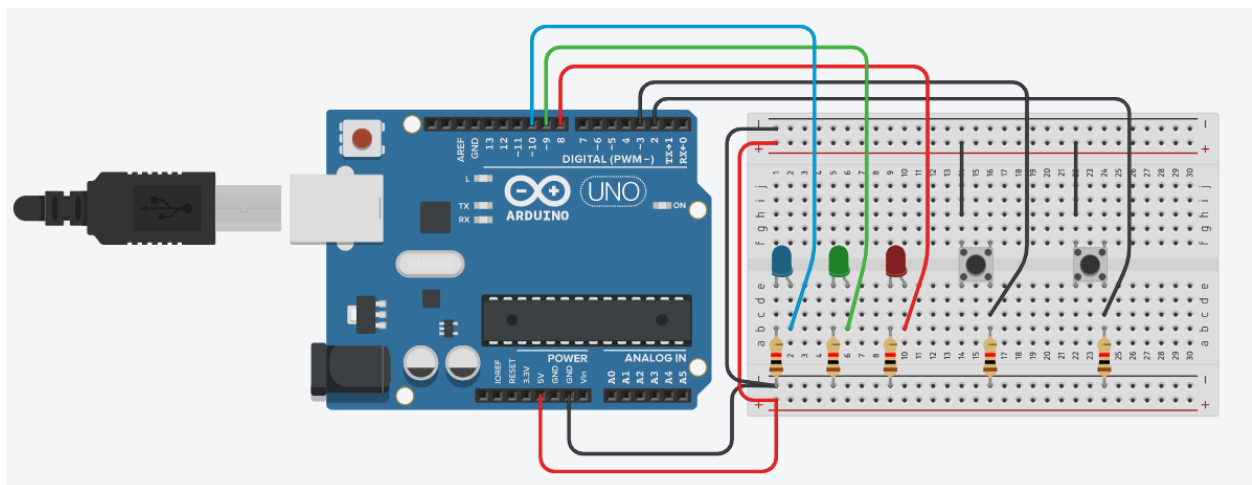
```

### USING SWITCH CASE STATEMENT:

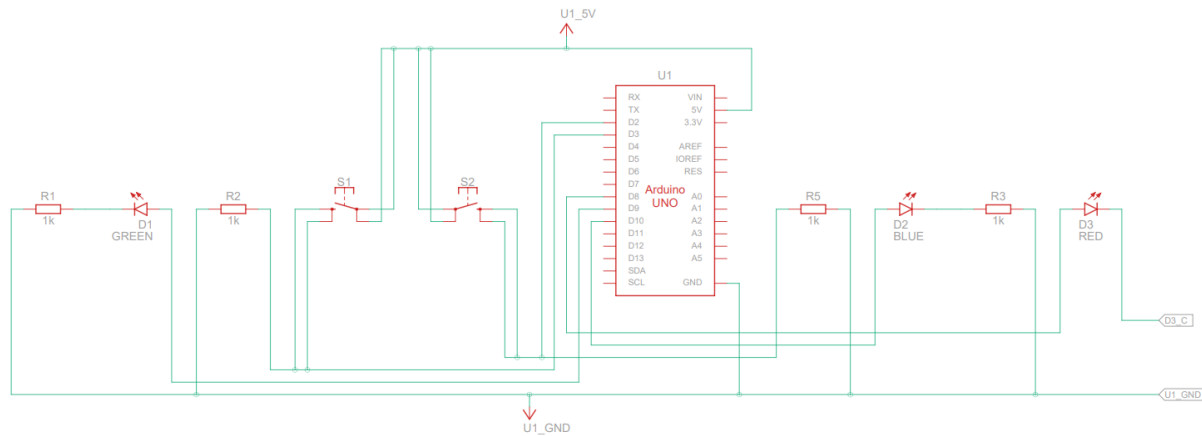
Switching LED button on and off using switch case:

You will need those components:

- Arduino board – any will do. We will use an Arduino Uno board.
- Breadboard.
- LED – any color.
- 150 Ohm resistor.
- A bunch of wires (male to female).



## Schematic



## Source Code:

```
const int btnPin1 = 2;

const int btnPin2 = 3;

const int LEDR = 8;

const int LEDG = 9;

const int LEDB = 10;

int num = 0;

bool val1 = HIGH;

bool val2 = HIGH;

void setup() {

  Serial.begin(9600);

  pinMode(btnPin1, INPUT);

  pinMode(btnPin2, INPUT);

  pinMode(LEDR, OUTPUT);

  pinMode(LEDG, OUTPUT);

  pinMode(LEDB, OUTPUT);

  digitalWrite(LEDR, LOW);
```

```

digitalWrite(LEDG,LOW);
digitalWrite(LEDDB,LOW);
}
void loop() {
  val1 = digitalRead(btnPin1);
  if (val1 == LOW)
  {
    delay(10); //10mS
    val1 = digitalRead(btnPin1);
    if (val1 == HIGH)
    {
      Serial.println(++num);
    }
  }
  val2 = digitalRead(btnPin2);
  if (val2 == LOW)
  {
    delay(10); //10mS
    val2 = digitalRead(btnPin2);
    if (val2 == HIGH)
    {
      Serial.println(num=0);
      digitalWrite(LEDDB,LOW);
      digitalWrite(LEDG,LOW);
      digitalWrite(LEDDB,LOW);
    }
  }
}

```

```

    }
}
switch(num){
    case 1:
        digitalWrite(LED_R,HIGH);
        digitalWrite(LED_G,LOW);
        digitalWrite(LED_B,LOW);
        break;
    case 2:
        digitalWrite(LED_R,LOW);
        digitalWrite(LED_G,HIGH);
        digitalWrite(LED_B,LOW);
        break;
    case 3:
        digitalWrite(LED_R,LOW);
        digitalWrite(LED_G,LOW);
        digitalWrite(LED_B,HIGH);
        break;
    case 4:
        digitalWrite(LED_R,HIGH);
        digitalWrite(LED_G,HIGH);
        digitalWrite(LED_B,HIGH);
        break;
}
}

```