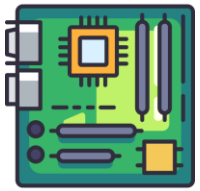
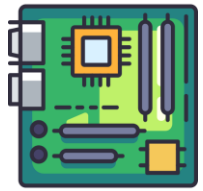


Laboratorio 3:

Lab de Wowki - Plataforma de Desarrollo: Arduino 1



Agenda

- Lab 2: Recapitulación
- Sensores y actuadores
- Plataforma de desarrollo Arduino Uno
- Pines Analogos
- Pines Digitales
- Pines PWM
- Programacion en Arduino

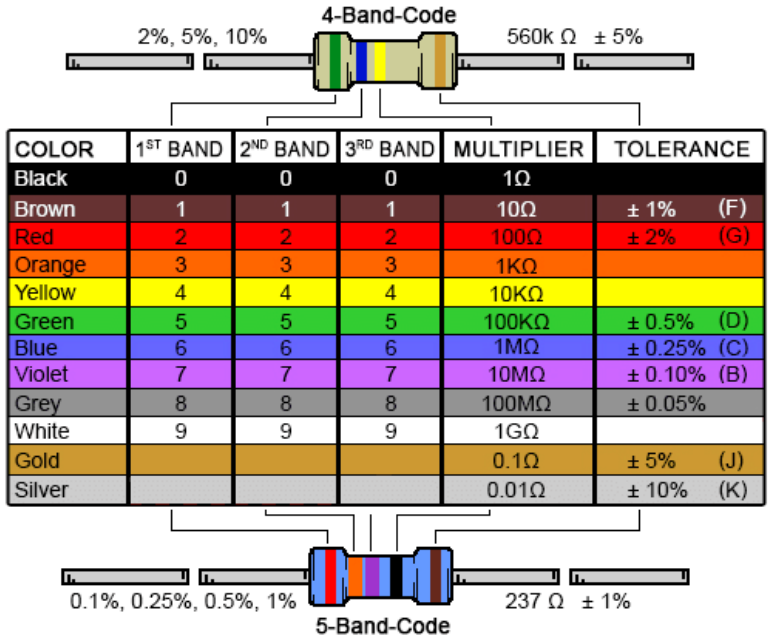
Lab 2: Recapitulación

- Circuitos en Serie y Paralelo
- Ley de Ohm
- Medir Resistencia
- Leer señales de voltaje
- Cómo encender un LED

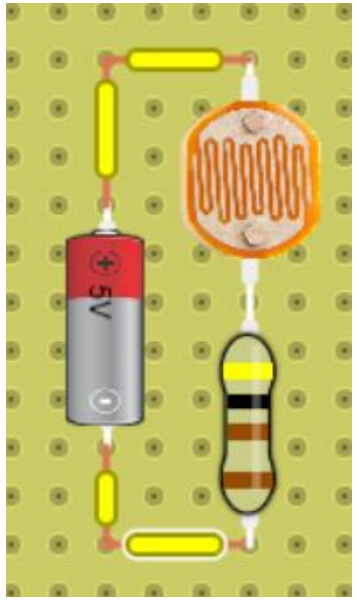
$$V = I \times R$$

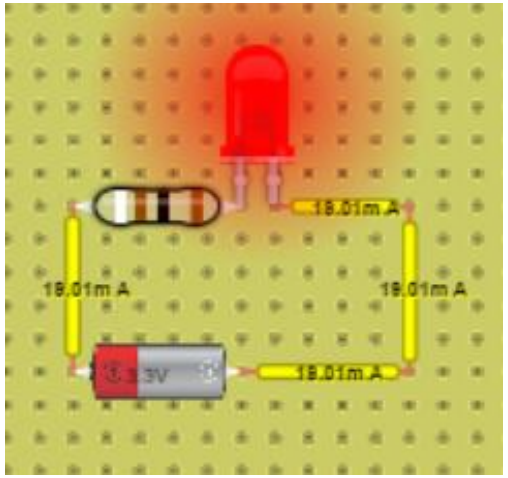
$$V_2 = \frac{R_2 \times V_{Total}}{R_1 + R_2}$$

$$R = \frac{V_{total} - V_F}{I_F}$$



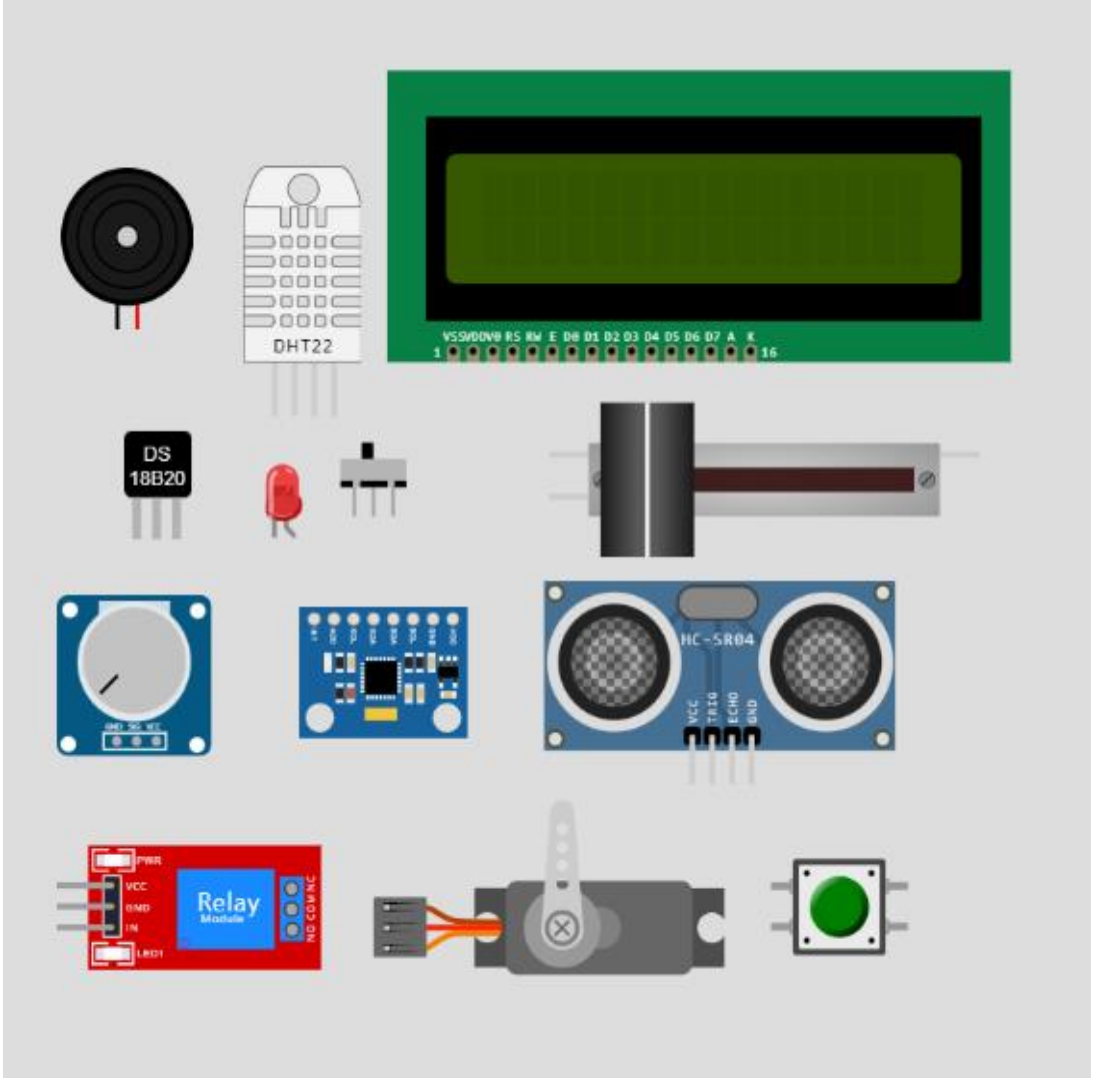
COLOR	1ST BAND	2ND BAND	3RD BAND	MULTIPLIER	TOLERANCE
Black	0	0	0	1Ω	
Brown	1	1	1	10Ω	± 1% (F)
Red	2	2	2	100Ω	± 2% (G)
Orange	3	3	3	1KΩ	
Yellow	4	4	4	10KΩ	
Green	5	5	5	100KΩ	± 0.5% (D)
Blue	6	6	6	1MΩ	± 0.25% (C)
Violet	7	7	7	10MΩ	± 0.10% (B)
Grey	8	8	8	100MΩ	± 0.05%
White	9	9	9	1GΩ	
Gold				0.1Ω	± 5% (J)
Silver				0.01Ω	± 10% (K)





Sensores y Actuadores

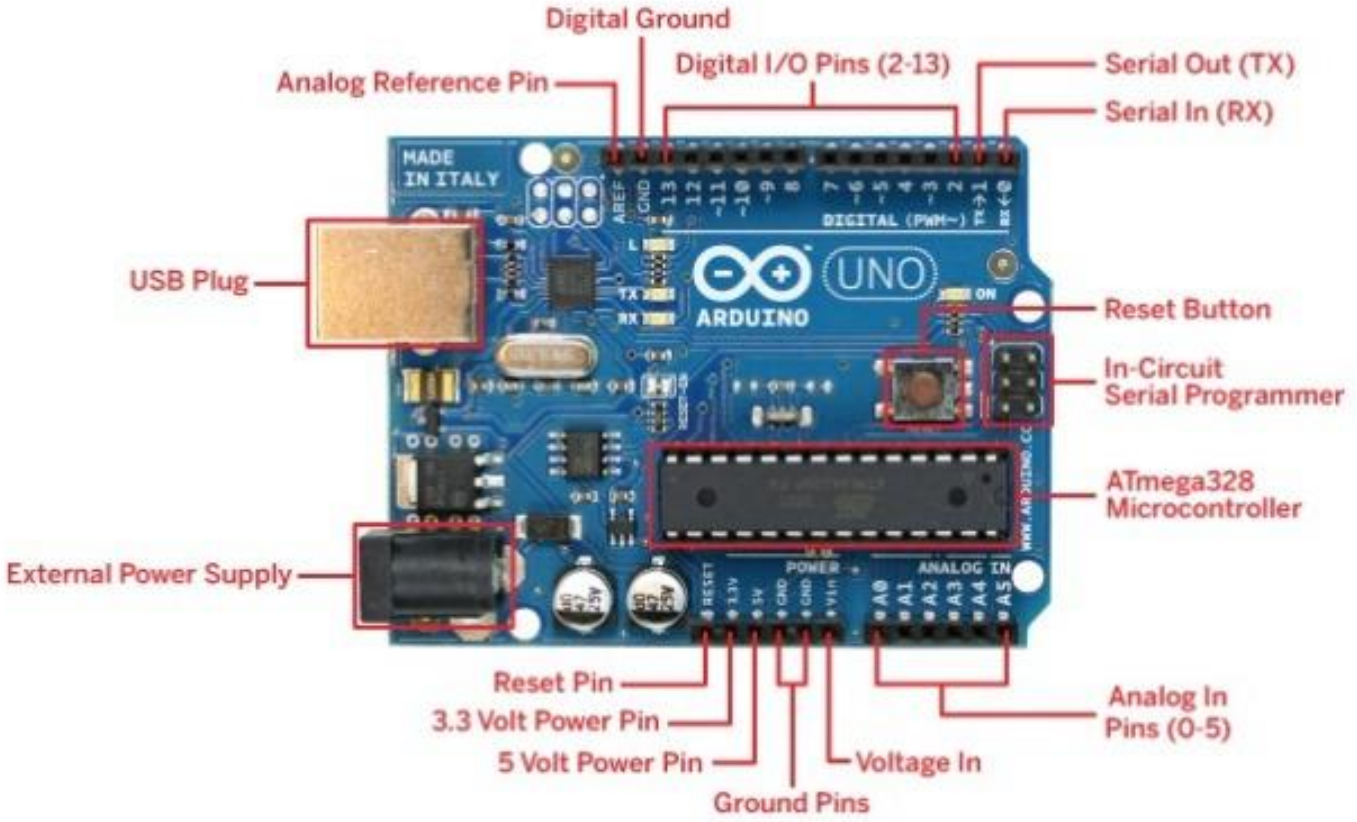
- Sensor de Humedad: DHT22
- Sensor de Temperatura: DS18B20
- Resistencia Ajustable
- LED
- LCD Display
- Motor Paso a Paso
- Botones
- Sensor Ultrasónico de Distancia
- Sensor de aceleración de 6 ejes y Giroscopio
- Zumbador



Plataforma de Desarrollo: Arduino Uno

Microcontrolador ATMega328

- 6 Pines Análogos de entrada
- 11 Pines Digitales I/O (5V o 0V)
- 6 Pines PWM de los Pines digitales
- 2 Pines de comunicación serial
- 3.3[V] Pin de Poder
- 5[V] Pin de Poder Otros Sensores

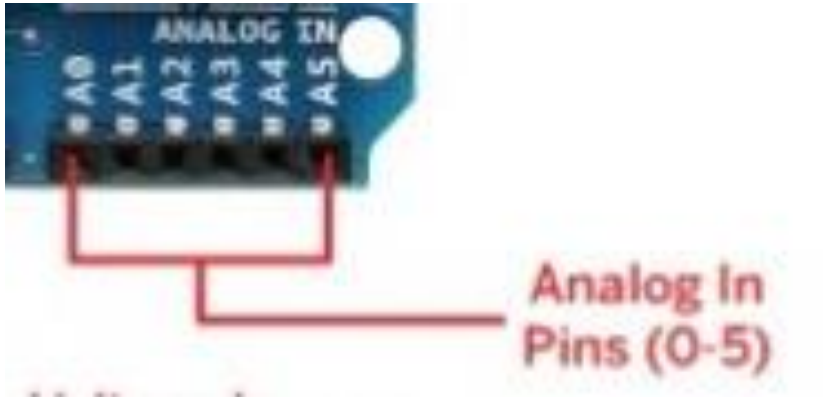


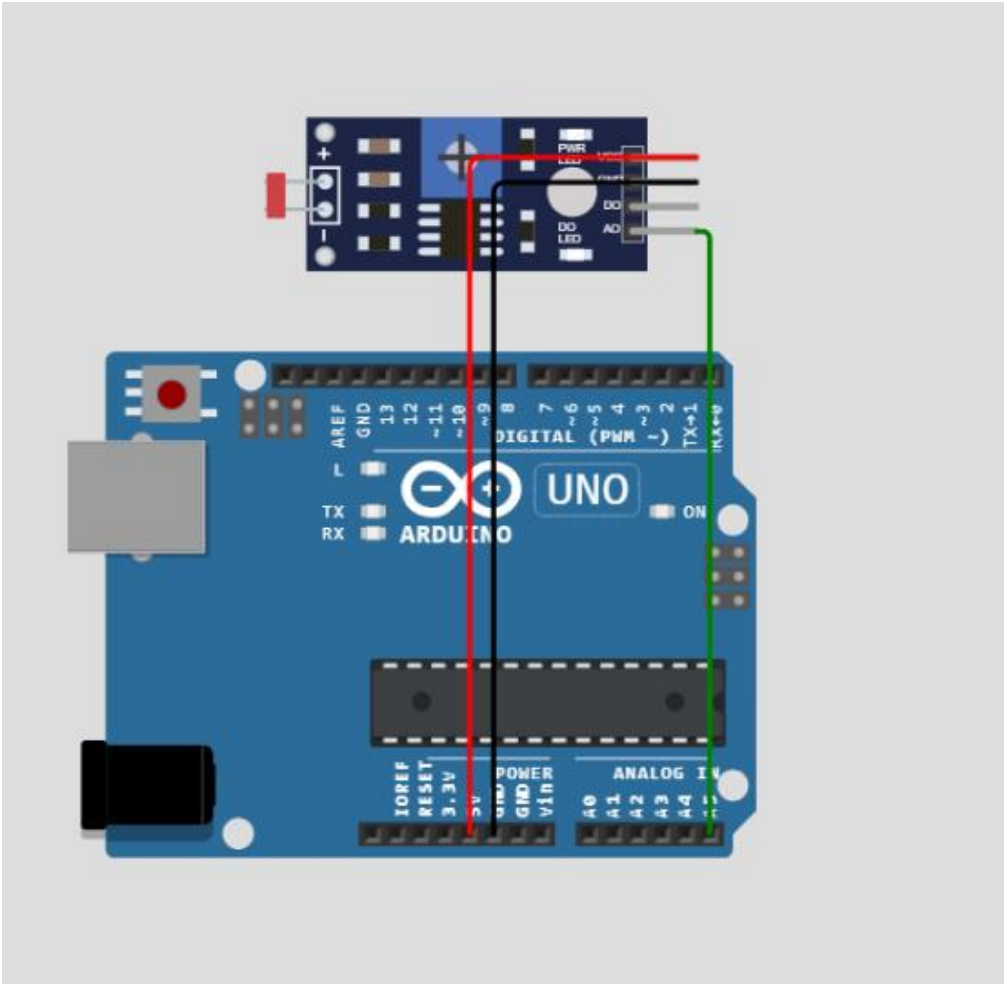
Simulación en plataforma Wowki:

https://wokwi.com/projects/new/arduino-uno

Arduino: Pines Análogos (entrada)

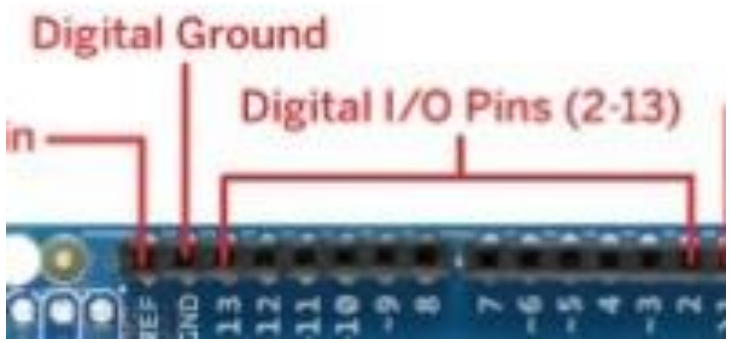
- 6 Pines Análogos (5V o 0V)
- Pines de entrada

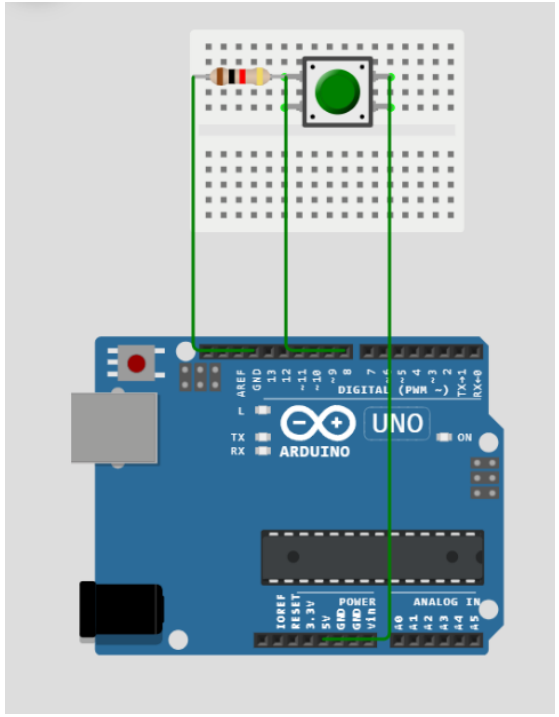


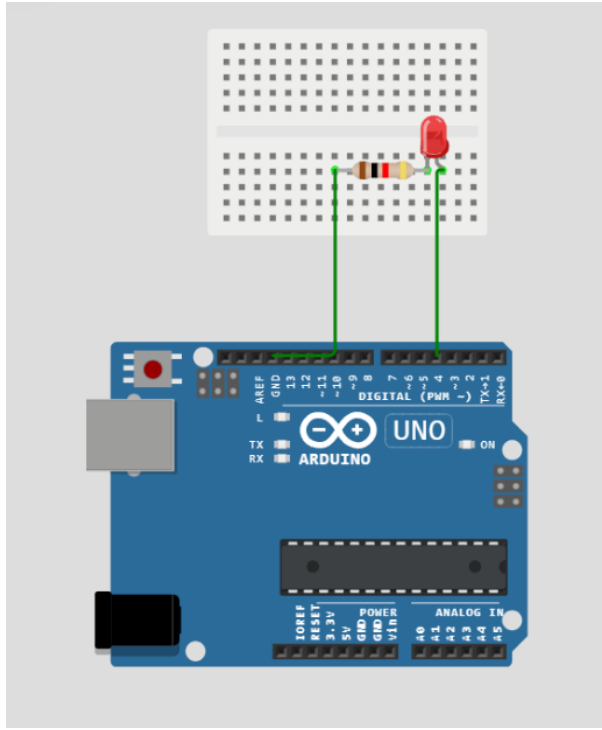


Arduino: Pines Digitales

- 11 Pines Digitales I/O (5V o 0V)
- Pines de entrada o salida

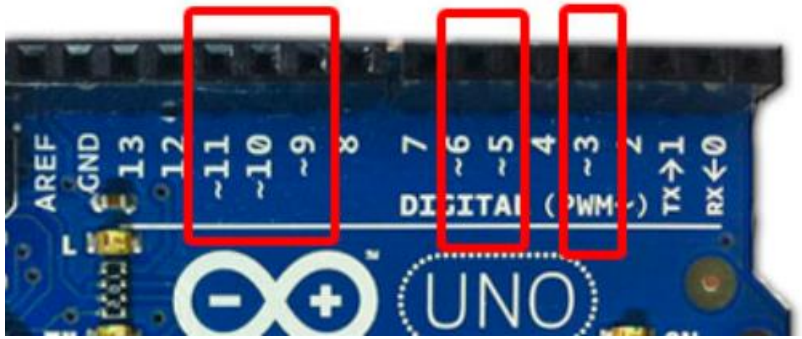


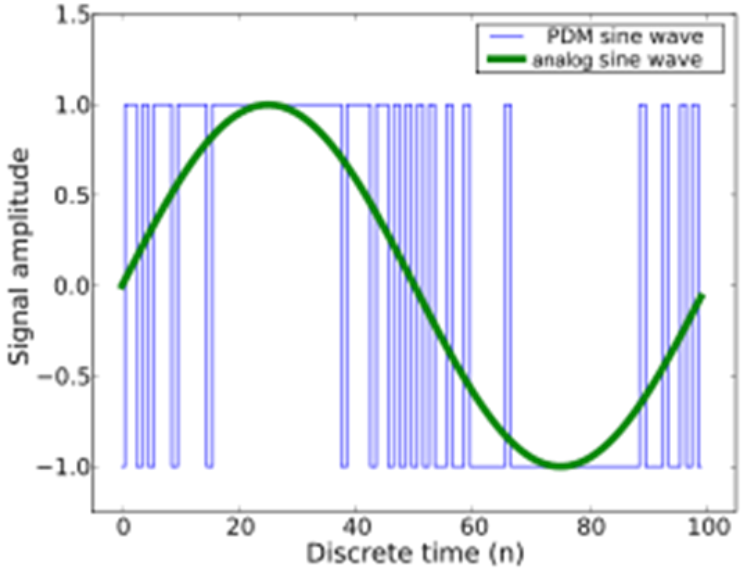


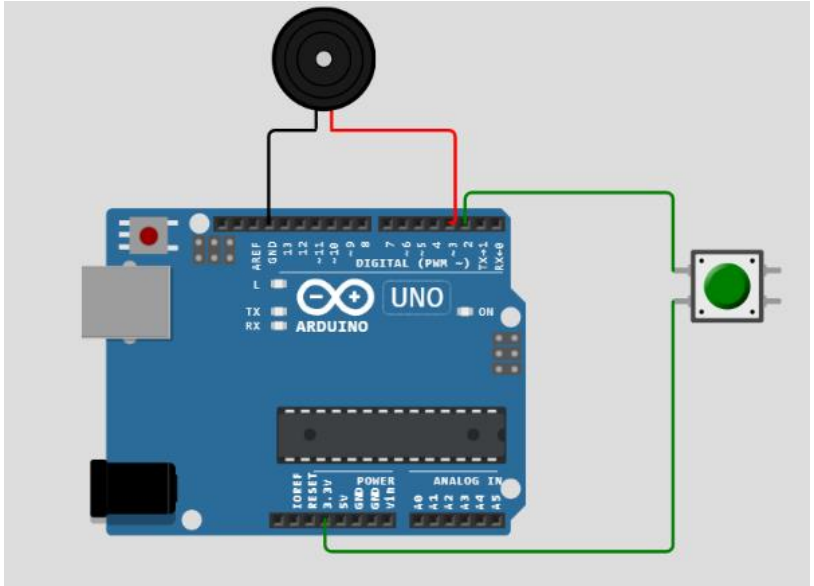


Arduino: Pines PWM (salida)

- 6 Pines PWM de los Pines digitales







Arduino: Programación

Declaración de Variables

Sección de Configuración

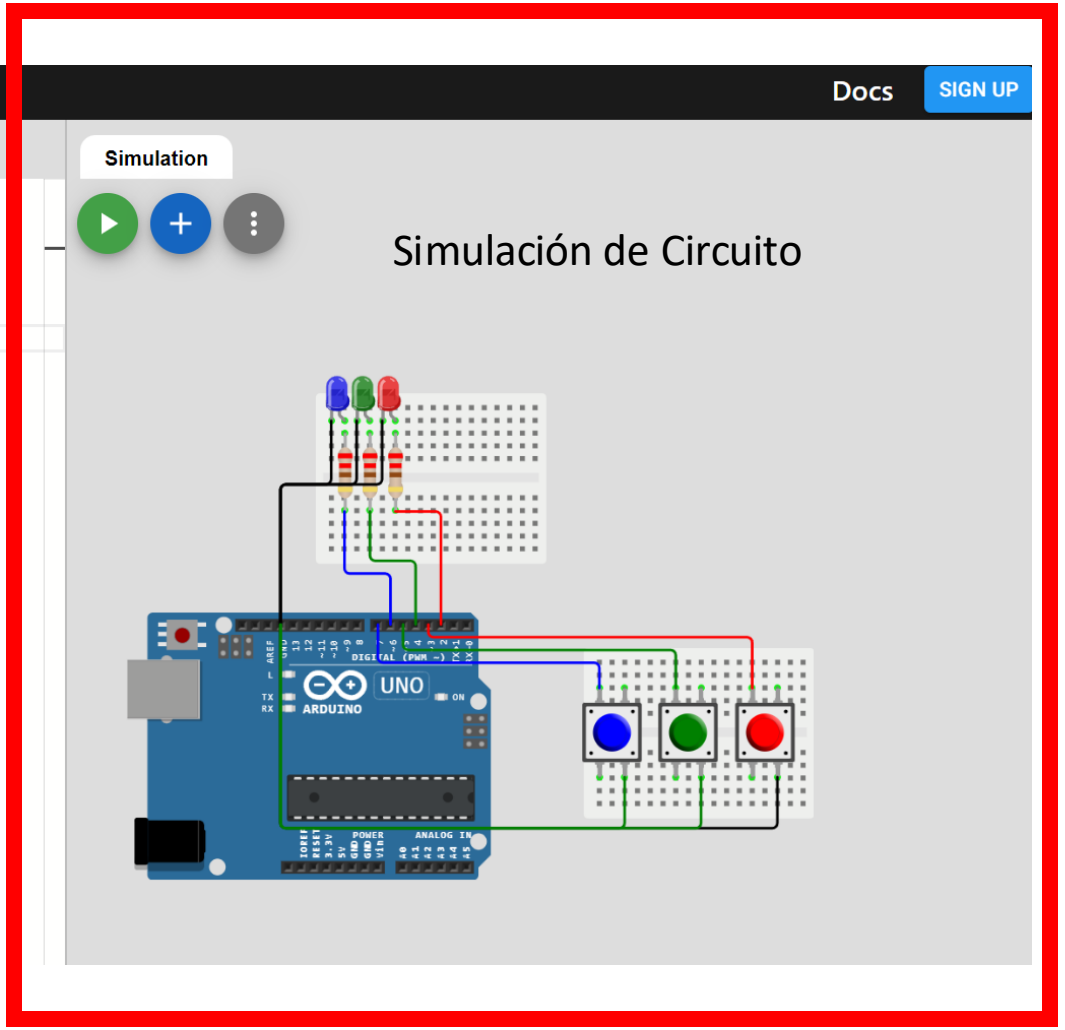
Sección de Bucle

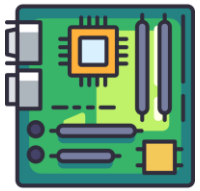
```
const int pinRojo = 2;
const int pinVerde = 4;
const int pinAzul = 6;
const int BotonRojo = 3;
const int BotonVerde = 5;

void setup() {
  pinMode(pinRojo, OUTPUT);
  pinMode(pinVerde, OUTPUT);
  pinMode(pinAzul, OUTPUT);
  pinMode(BotonRojo, INPUT_PULLUP);
  pinMode(BotonVerde, INPUT_PULLUP);
  pinMode(BotonAzul, INPUT_PULLUP);
}

void loop() {
    if(digitalRead(BotonRojo) == LOW){
        digitalWrite(pinRojo, HIGH);
    }
    if(digitalRead(BotonVerde) == LOW){
        digitalWrite(pinVerde, HIGH);
    }
    if(digitalRead(BotonAzul) == LOW){
        digitalWrite(pinAzul, HIGH);
    }

    digitalWrite(pinRojo, LOW);
    digitalWrite(pinVerde, LOW);
```





Demo de Wowki