

Introdução ao Arduino

Seminário Prático de Robótica e Automação

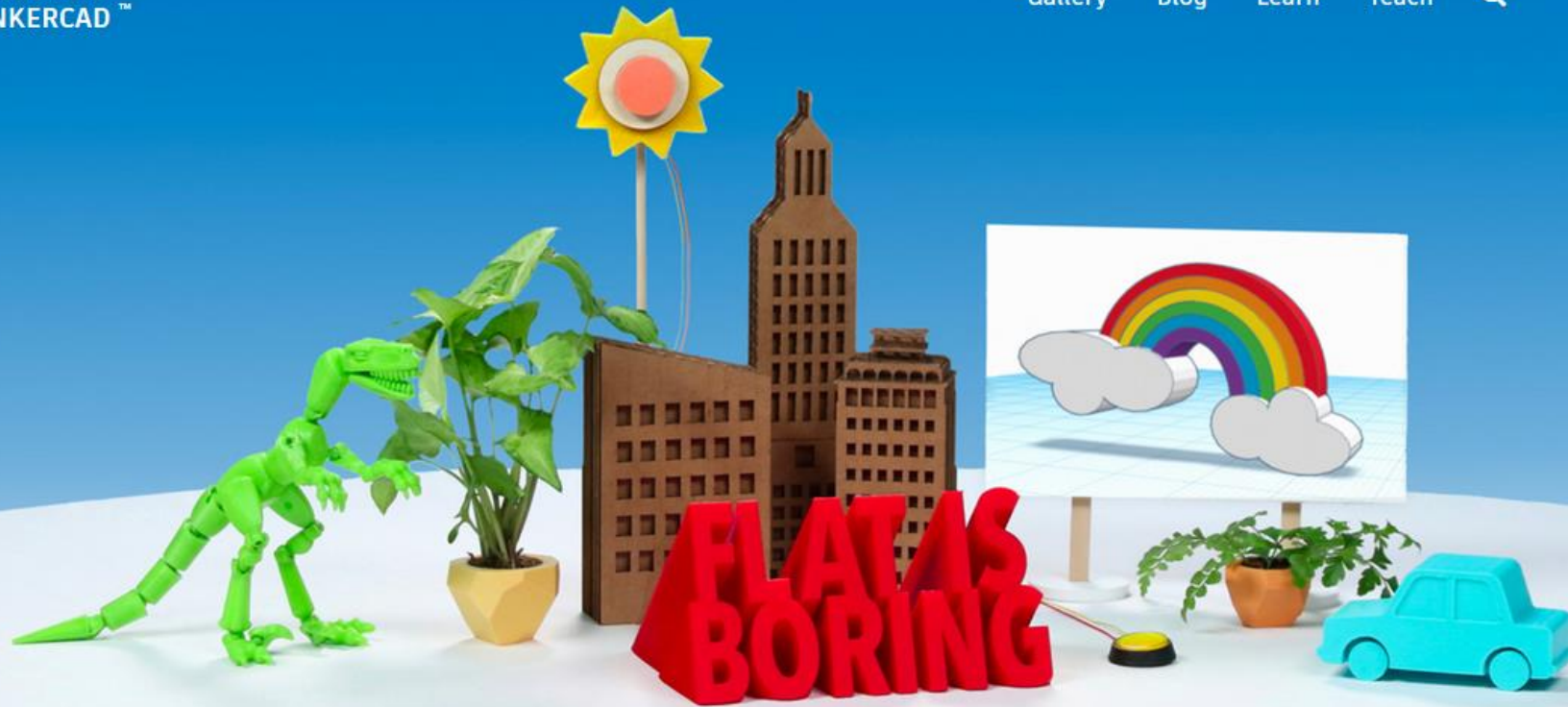
Prof. Me. Filipo Mór
filipomor.com

01 de Junho de 2019





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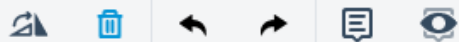
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 Código

 Iniciar simulação

Exportar

Compart.



Componentes
Básico

Componentes
Básico
Todos

Disparadores
Básico
Arduino
Montagens de circuito
Todos



Botão



Potenciômetro

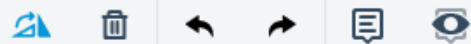


Capacitor



Interruptor
deslizante





 Código

 Iniciar simulação

Exportar

Compart.

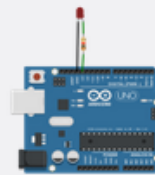


Disparadores
Arduino

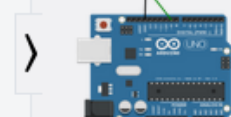
Pesquisar



Placa de teste



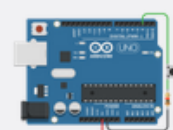
Piscar



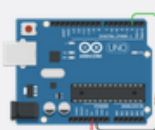
Esmaecer



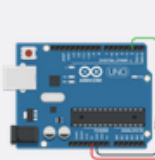
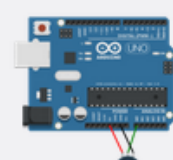
Botão

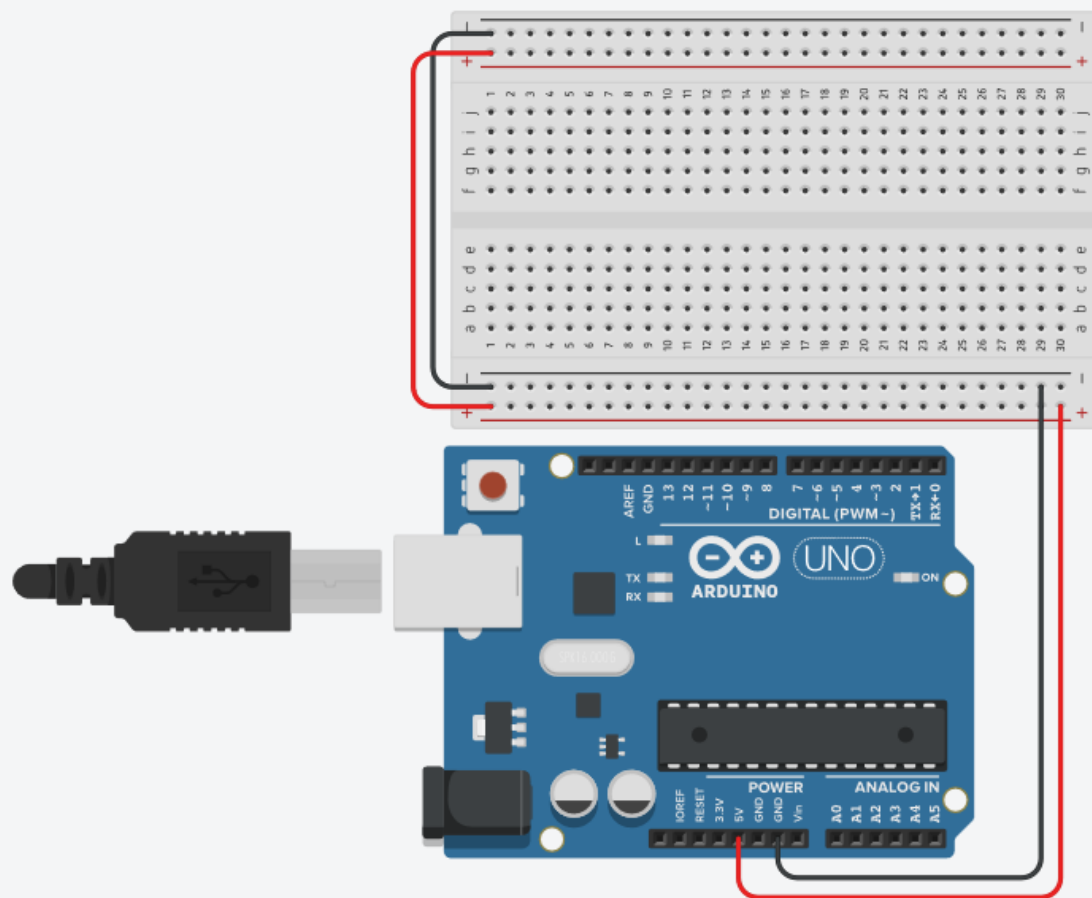
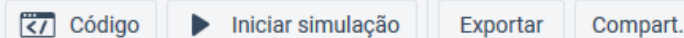
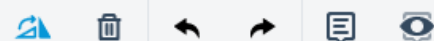


Devolução

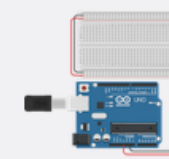


Detecção de
mudança de

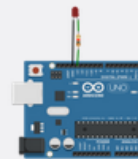




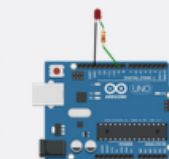
Pesquisar



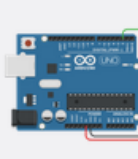
Placa de teste



Piscar



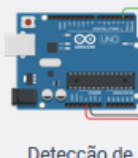
Esmaecer



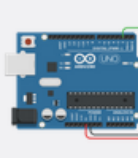
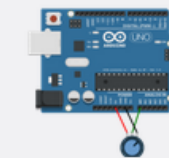
Botão



Devolução



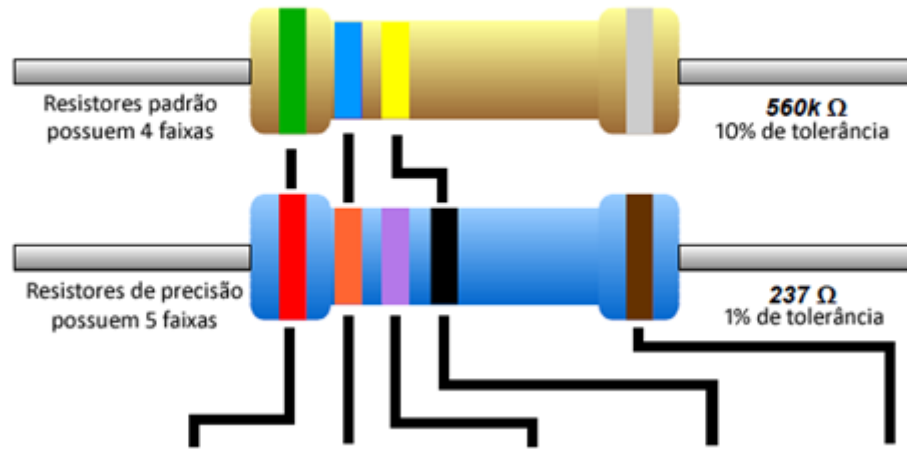
Detecção de
mudança de



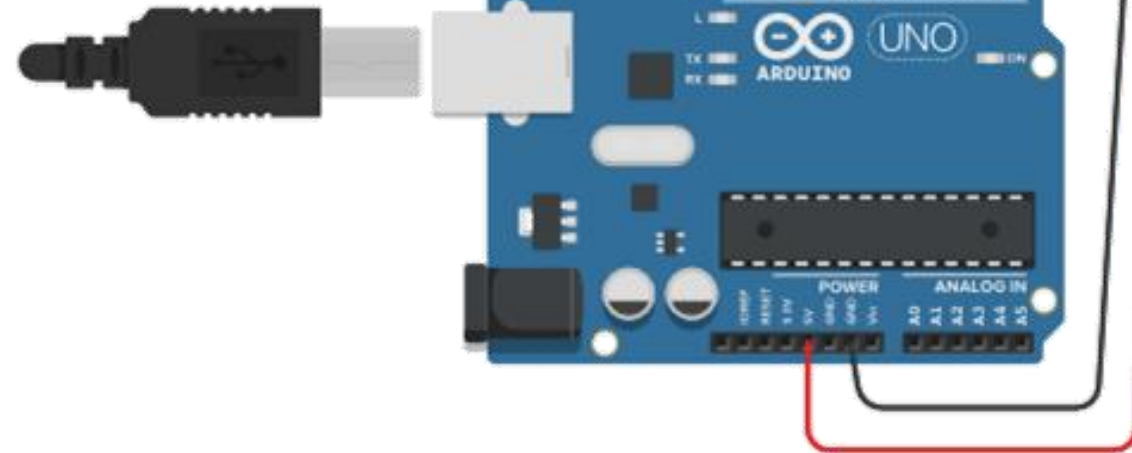
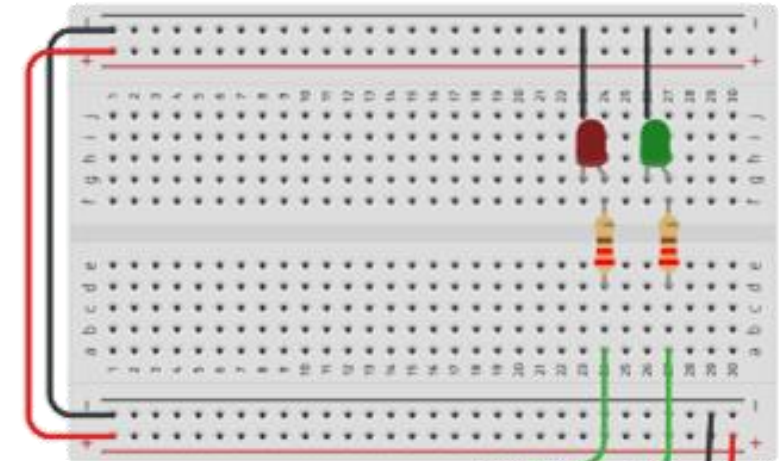


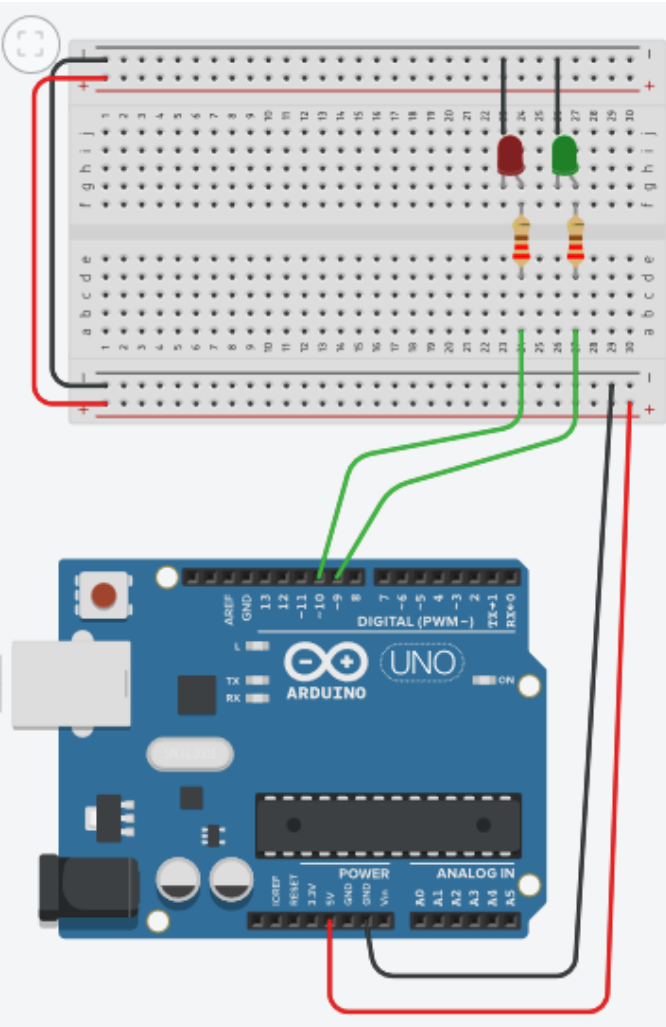
220R (220 ohms)

A extremidade com mais faixas deve apontar para a esquerda



Cor	1ª Faixa	2ª Faixa	3ª Faixa	Multiplicador	Tolerância
Preto	0	0	0	x 1 Ω	
Marrom	1	1	1	x 10 Ω	+/- 1%
Vermelho	2	2	2	x 100 Ω	+/- 2%
Laranja	3	3	3	x 1K Ω	
Amarelo	4	4	4	x 10K Ω	
Verde	5	5	5	x 100K Ω	+/- .5%
Azul	6	6	6	x 1M Ω	+/- .25%
Violeta	7	7	7	x 10M Ω	+/- .1%
Cinza	8	8	8		+/- .05%
Branco	9	9	9		
Dourado				x .1 Ω	+/- 5%
Prateado				x .01 Ω	+/- 10%





Blocos + texto

Saída

Entrada

Notação

Controlar

Matemática

Variáveis

aguardar 1 s

repetir 10 vezes

repetir enquanto

se , então

se , então

outro

Monitor serial

Selecione um bloco para arrastar aqui.

1 (Arduino Uno R3)

```
1  int brilho = 0;
2
3  void setup()
4  {
5      pinMode(10, OUTPUT);
6      pinMode(9, OUTPUT);
7  }
8
9  void loop()
10 {
11     for (brilho = 0; brilho <= 255; brilho += 10) {
12         analogWrite(10, brilho);
13         analogWrite(9, (255 - brilho));
14         delay(300); // Wait for 300 millisecond(s)
15     }
16 }
```

contagem por para de a fazer

definir pino como

definir pino como

aguardar




```
int brilho = 0;
```

```
void setup()
```

```
{
```

```
  pinMode(10, OUTPUT);
```

```
  pinMode(9, OUTPUT);
```

```
}
```

```
void loop()
```

```
{
```

```
  for (brilho = 0; brilho <= 255; brilho += 10) {
```

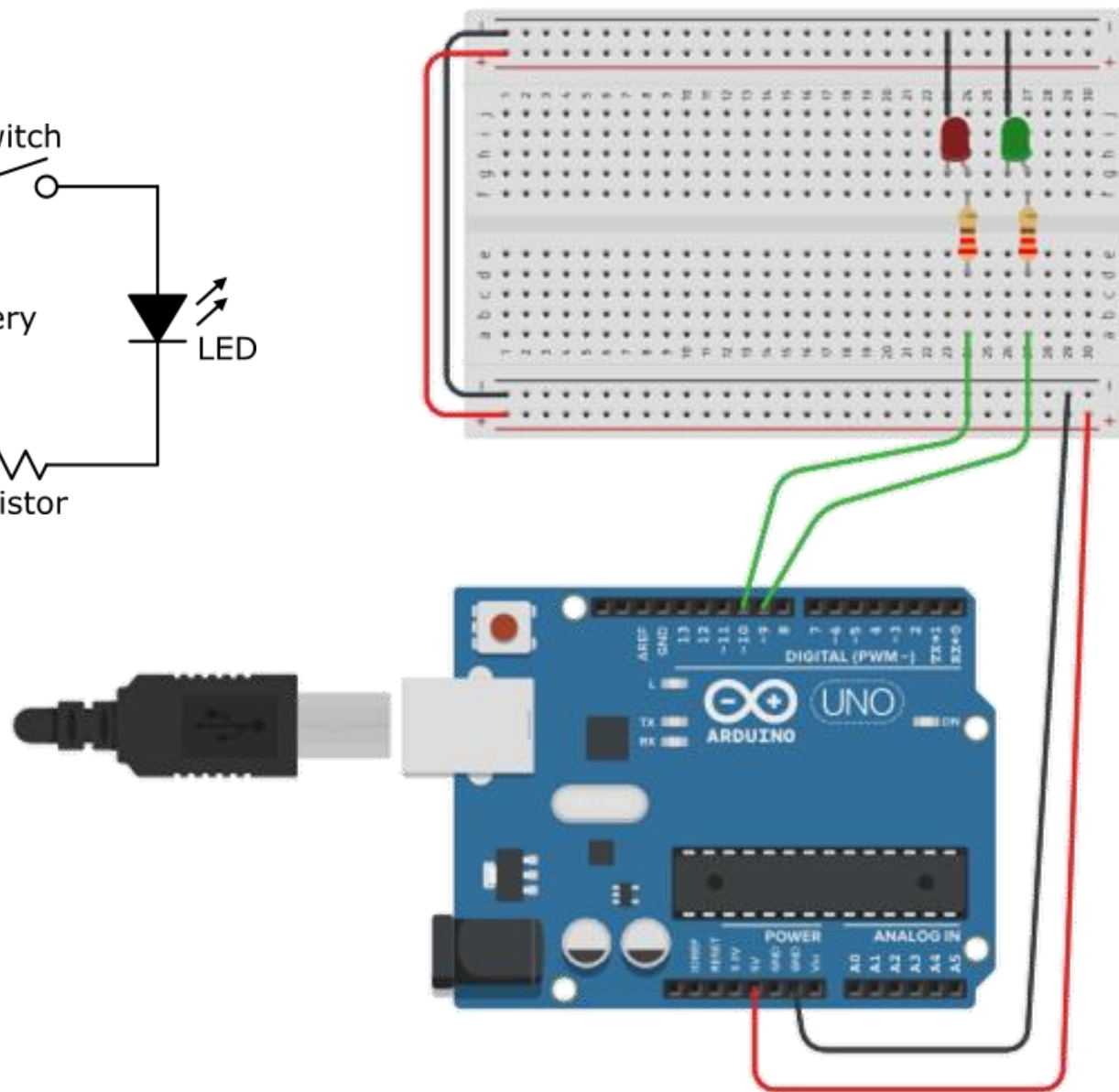
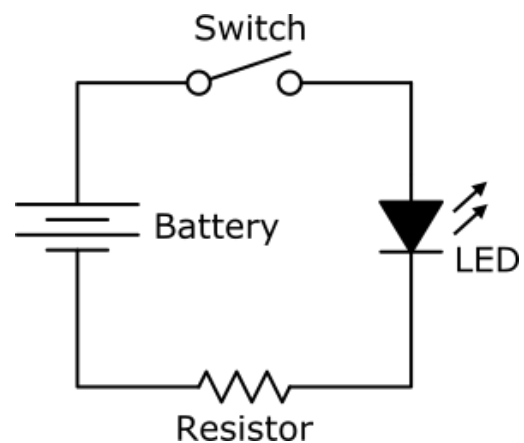
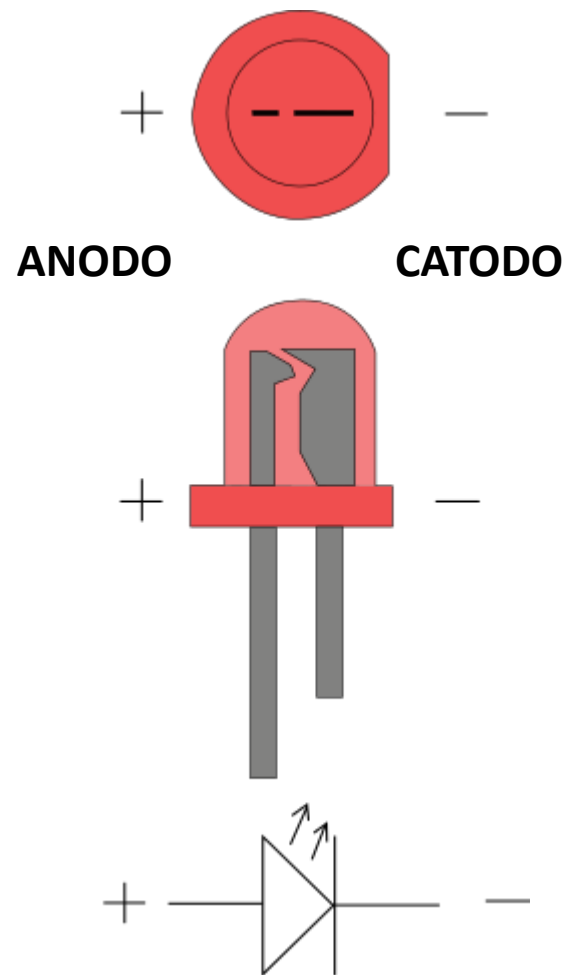
```
    analogWrite(10, brilho);
```

```
    analogWrite(9, (255 - brilho));
```

```
    delay(300); // Wait for 300 millisecond(s)
```

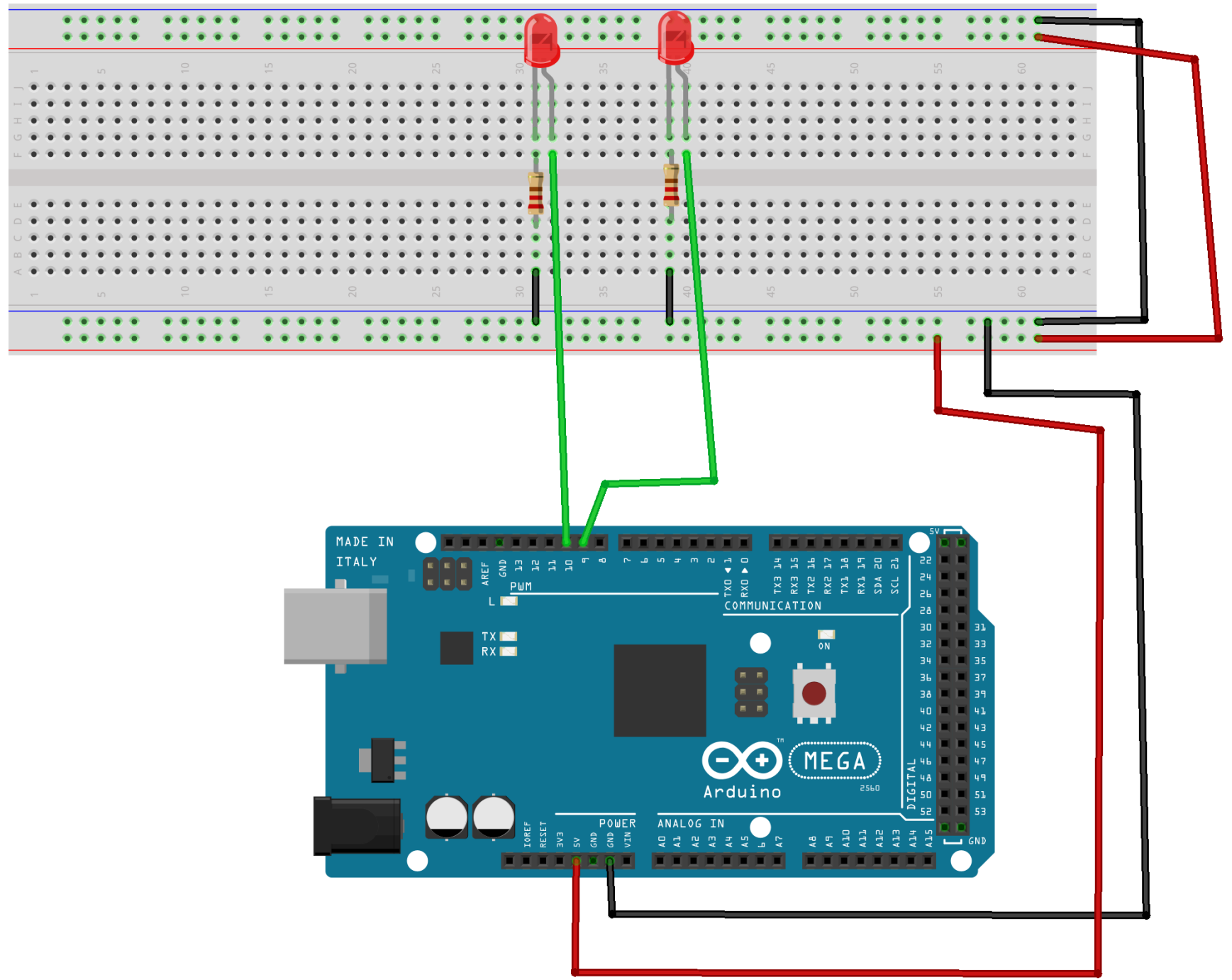
```
  }
```

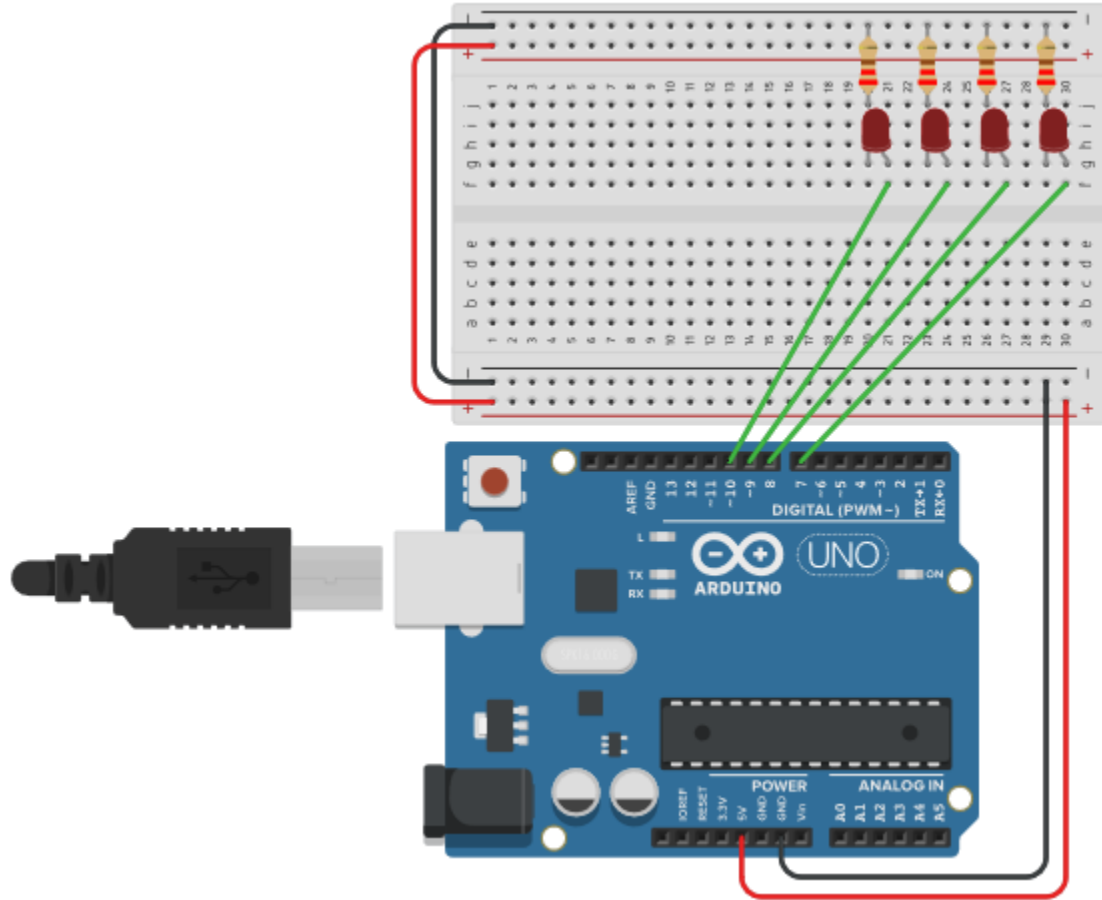
```
}
```



**Montagem com o
Arduino UNO**

Montagem com o Arduino MEGA

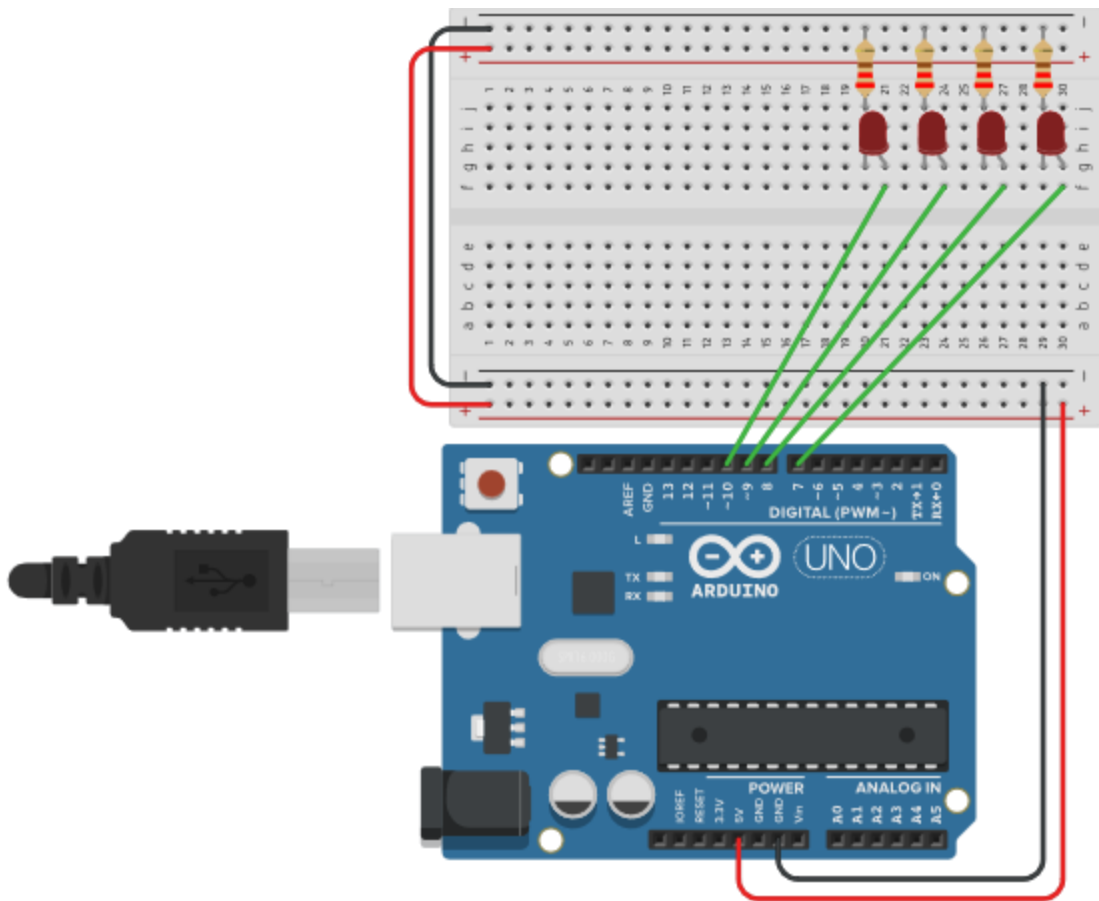




```
1  int Led = 0;
2
3  void setup()
4  {
5      pinMode(10, OUTPUT);
6      pinMode( 9, OUTPUT);
7      pinMode( 8, OUTPUT);
8      pinMode( 7, OUTPUT);
9  }
10
11 void loop()
12 {
13     // Acende os leds um a um.
14     for (Led = 7; Led <= 10; Led += 1) {
15         digitalWrite(Led, HIGH);
16         delay(500); // aguarda meio segundo
17     }
18
19     // agora apaga os leds, um a um
20     for (Led = 7; Led <= 10; Led += 1) {
21         digitalWrite(Led, LOW);
22         delay(500); // aguarda meio segundo
23     }
24
25     delay(10); // Delay a little bit to improve simulation performance
26 }
```

Trilha de LEDs

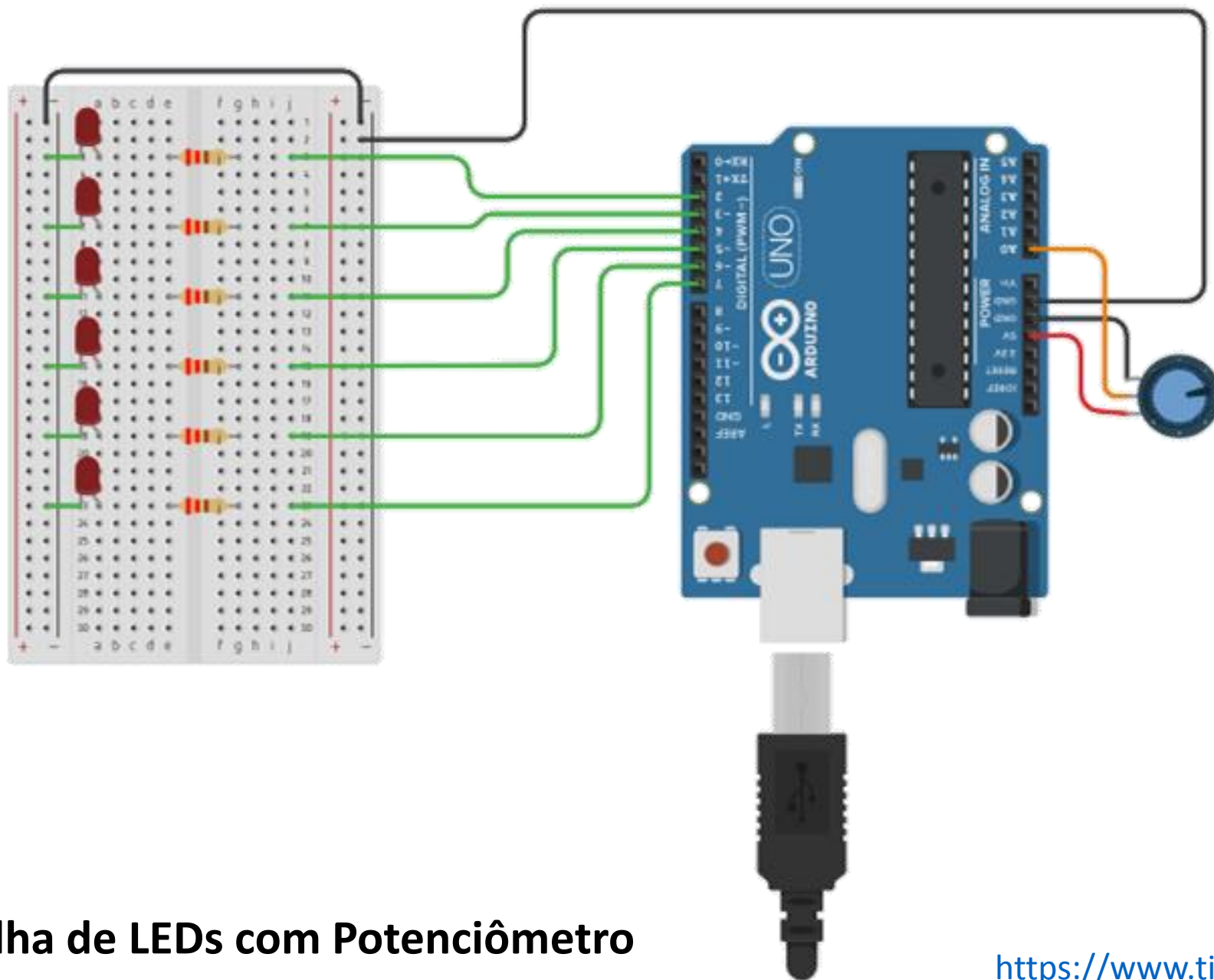
<https://www.tinkercad.com/things/f3krmna18OL>



```
1  int Led = 0;
2
3  void setup()
4  {
5      pinMode(10, OUTPUT);
6      pinMode( 9, OUTPUT);
7      pinMode( 8, OUTPUT);
8      pinMode( 7, OUTPUT);
9      Serial.begin(9600); // inicia comunicação serial
10 }
11
12 void loop()
13 {
14     // Acende os leds um a um.
15     for (Led = 7; Led <= 10; Led += 1) {
16         digitalWrite(Led, HIGH);
17         Serial.print("Acendendo LED: "); Serial.println(Led);
18         delay(500); // aguarda meio segundo
19     }
20
21     // agora apaga os leds, um a um
22     for (Led = 7; Led <= 10; Led += 1) {
23         digitalWrite(Led, LOW);
24         Serial.print("Apagando LED: "); Serial.println(Led);
25         delay(500); // aguarda meio segundo
26     }
27     delay(10); // Delay a little bit to improve simulation performance
28 }
```

Trilha de LEDs com Monitor Serial

<https://www.tinkercad.com/things/2bRHDAk7pQW>



Trilha de LEDs com Potenciômetro

<https://www.tinkercad.com/things/jS3VIYxUjGN>

```

void setup()
{
  pinMode(2, OUTPUT);
  pinMode(3, OUTPUT);
  pinMode(4, OUTPUT);
  pinMode(5, OUTPUT);
  pinMode(6, OUTPUT);
  pinMode(7, OUTPUT);
  pinMode(A0, INPUT);
}

void loop()
{
  int leitura = analogRead(A0); // lê um valor entre 0 e 1023
  int referencia = map(leitura, 0, 1023, 2, 7); // escala o valor lido entre 2 e 7

  for(int Led = 2; Led <= 7 ; Led++)
  {
    if(referencia > Led)
    {
      digitalWrite(Led, HIGH);
    }
    else
    {
      digitalWrite(Led, LOW);
    }
    delay(100); // aguarda 0,1s
  }
}

```

PROBLEMA:

Pq o último LED nunca acende?

Como resolver???

Obrigado!!!!

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01 de Junho de 2019

