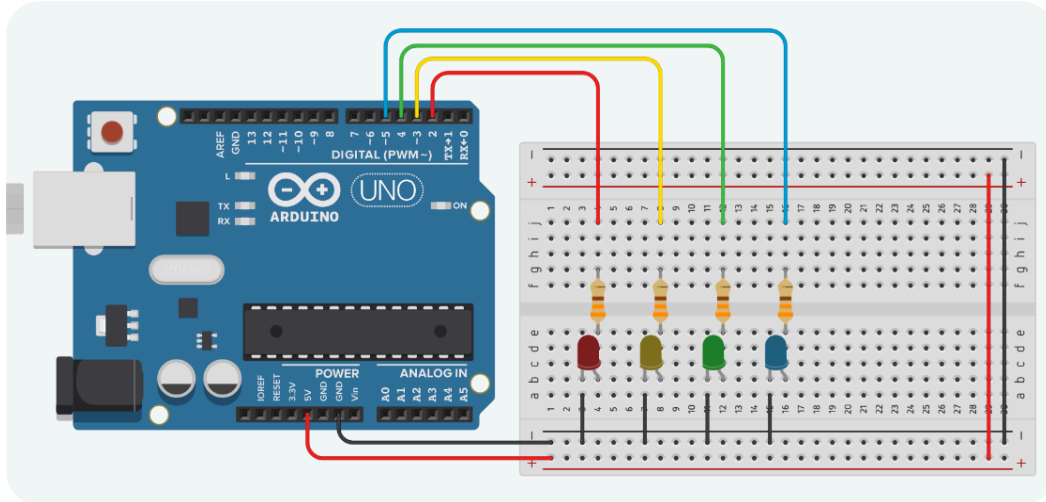


# EP\_03

## Exercício 1

### Circuito



### Programa

```
#define red 2
#define yel 3
#define gren 4
#define blu 5

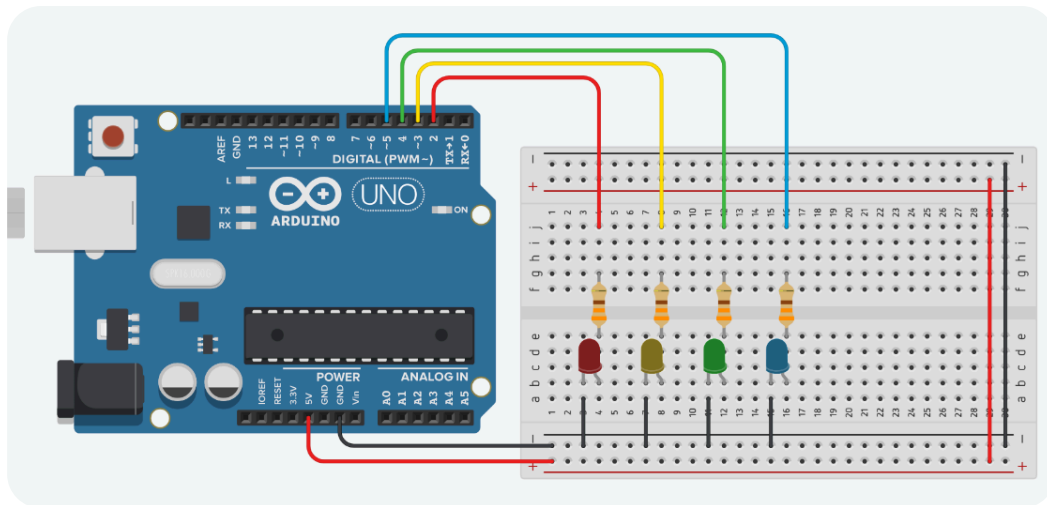
void setup(){
  pinMode(red, OUTPUT);
  pinMode(yel, OUTPUT);
  pinMode(gren, OUTPUT);
  pinMode(blu, OUTPUT);
}

void shine(int led1, int led2){
  digitalWrite(led1, HIGH);
  digitalWrite(led2, HIGH);
  delay(1000);
  digitalWrite(led1, LOW);
  delay(1000);
  digitalWrite(led2, LOW);
}

void loop(){
  for(int i=0; i<3; i++) shine(blu, red);
  for(int i=0; i<4; i++) shine(blu, gren);
  for(int i=0; i<2; i++) shine(blu, yel);
}
```

# Exercício 2

## Circuito



## Programa

```
#define red 2
#define yel 3
#define gre 4
#define blu 5

String in;
char a  = ' ',
      b  = ' ',
      op = ' ';
bool A = false,
     B = false,
     S = false,
     Cout = false;

void setup(){
  pinMode(red, OUTPUT);
  pinMode(yel, OUTPUT);
  pinMode(gre, OUTPUT);
  pinMode(blu, OUTPUT);
  Serial.begin(9600);
}

void show(){
  digitalWrite(red, LOW);
  digitalWrite(yel, LOW);
  digitalWrite(gre, LOW);
  digitalWrite(blu, LOW);
  if(A) digitalWrite(red, HIGH);
  if(B) digitalWrite(yel, HIGH);
  if(S) digitalWrite(gre, HIGH);
  if(Cout) digitalWrite(blu, HIGH);
}
```

```

void ULA(){
    if(a==' ' || b==' ' || op==' ') Serial.println("Input invalido4");
    else{
        A    = a=='1',
        B    = b=='1',
        S    = false,
        Cout = A && B;
        switch(op){
            case '0': S = A && B;          break;
            case '1': S = A || B;          break;
            case '2': S = !A;              break;
            case '3': S = (A&&!B || !A&&B); break;
        }
        show();
    }
}

void loop(){
    while(Serial.available()>0){
        in = Serial.readString();

        if(in.length()!=3){
            Serial.println("Input invalido0");
        }
        else{
            a = in.charAt(0);
            b = in.charAt(1);
            op = in.charAt(2);
            if(a!='0' && a!='1') Serial.println("Input invalido1");
            else if(b!='0' && b!='1') Serial.println("Input invalido2");
            else if(op!='0' && op!='1' && op!='2' && op!='3') Serial.println("Input
invalido3");
            else ULA();
        }
    }
}

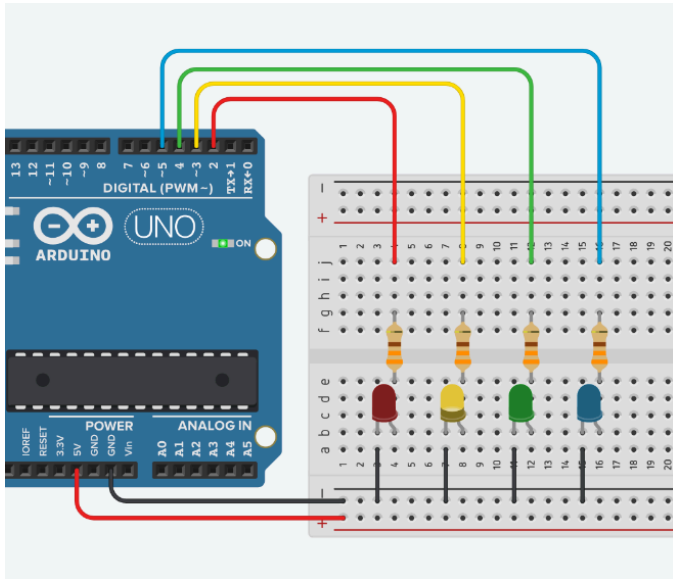
```

## Tabela de testes

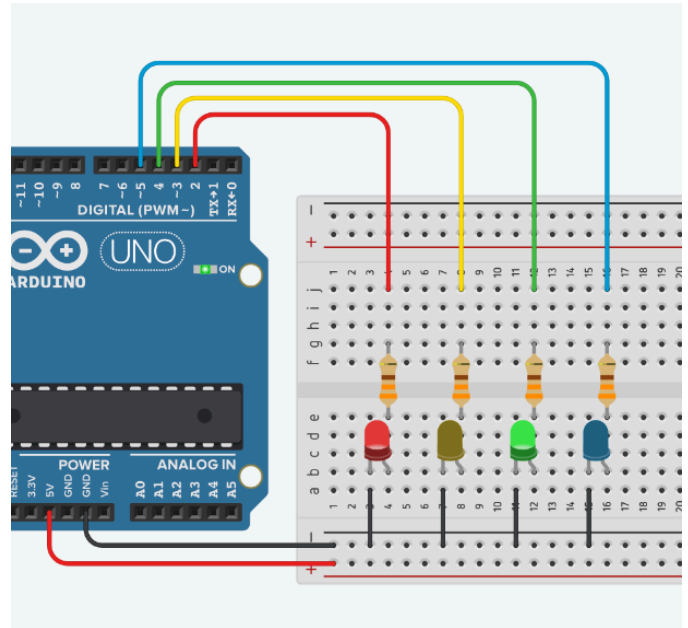
Teste	Instrução Realizada	Binário (A,B,OpCode)	Valor em Hexa	Resultado
1	AND(A,B)	0100	0x4	0
2	OR(A,B)	1001	0x9	1
3	SOMA(A,B)	1011	0xB	1
4	NOT(A)	0010	0x2	1
5	AND(B,A)	0100	0x4	0

# Prints dos testes

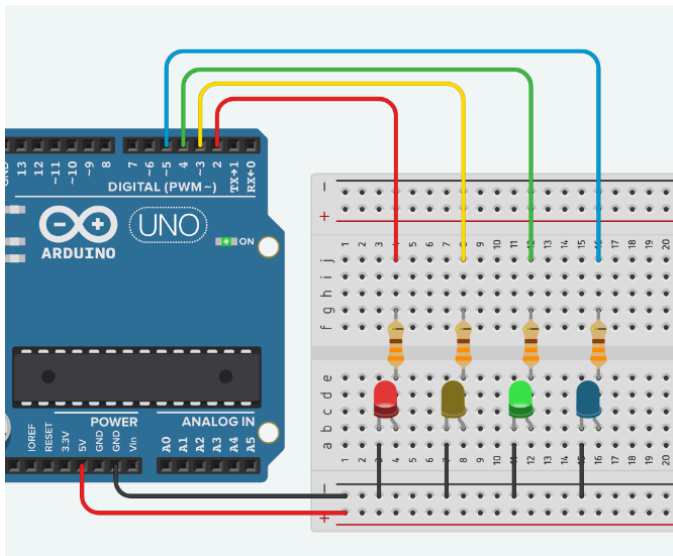
Teste 1:



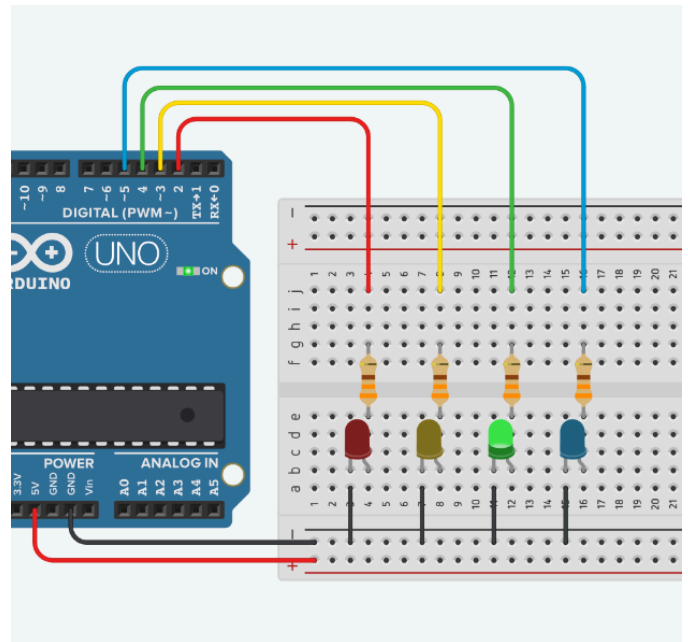
Teste 2:



Teste 3:



Teste 4:



Teste 5:

