

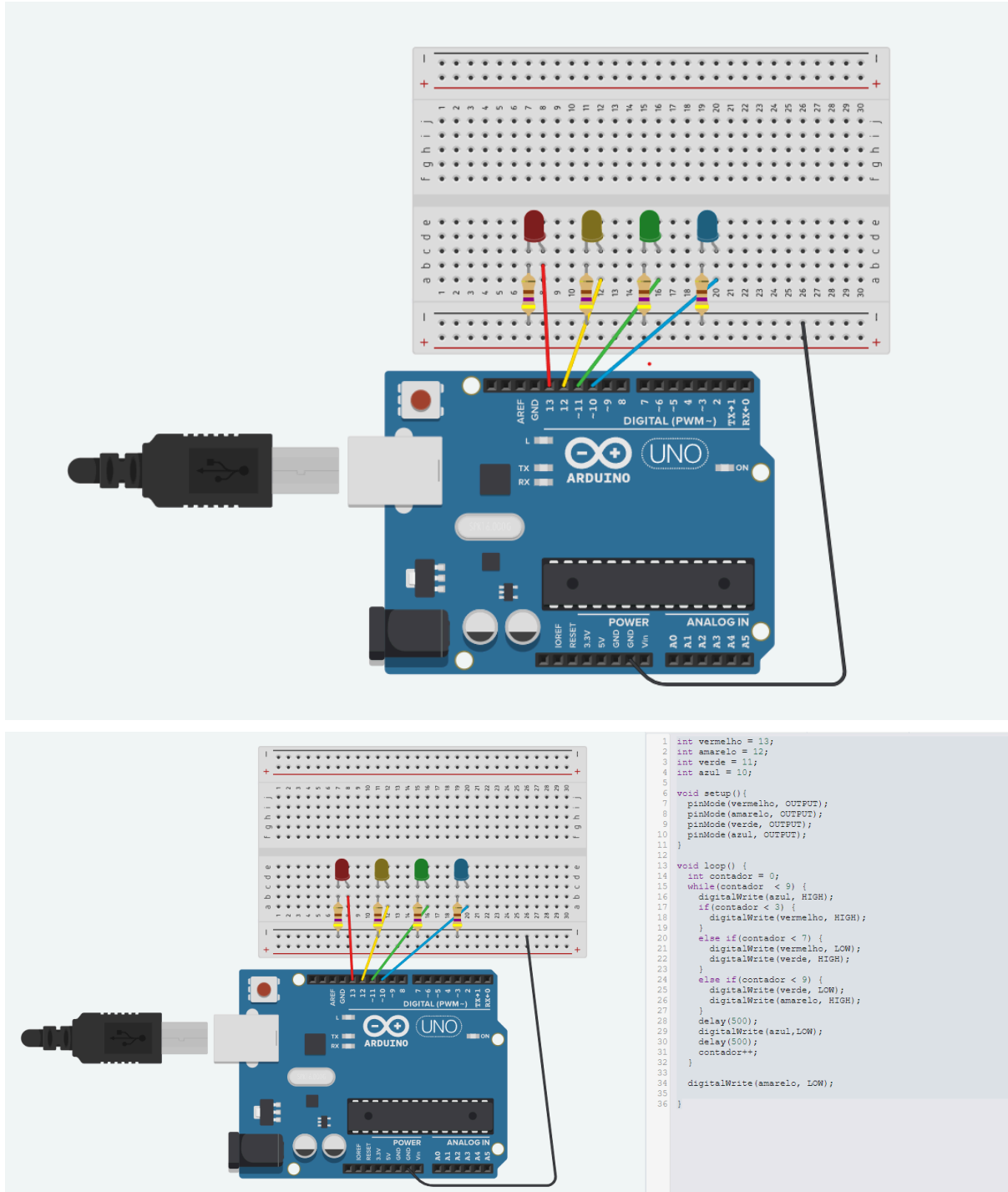
Exercício Prático 3

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1)

Montagem:



Programa:

```
int vermelho = 13;
int amarelo = 12;
int verde = 11;
int azul = 10;

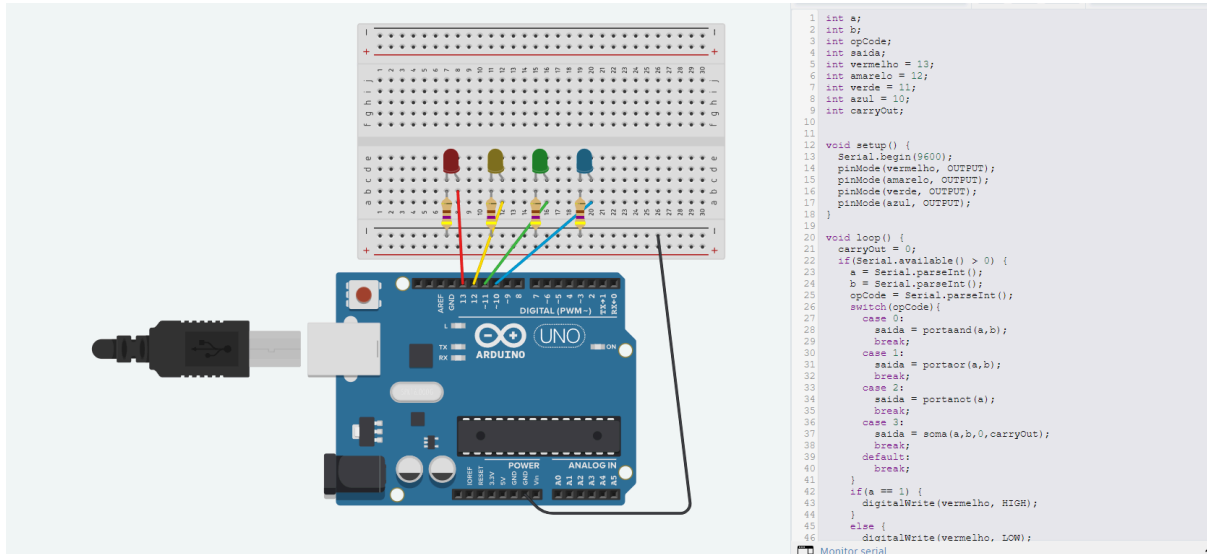
void setup(){
  pinMode(vermelho, OUTPUT);
  pinMode(amarelo, OUTPUT);
  pinMode(verde, OUTPUT);
  pinMode(azul, OUTPUT);
}

void loop() {
  int contador = 0;
  while(contador < 9) {
    digitalWrite(azul, HIGH);
    if(contador < 3) {
      digitalWrite(vermelho, HIGH);
    }
    else if(contador < 7) {
      digitalWrite(vermelho, LOW);
      digitalWrite(verde, HIGH);
    }
    else if(contador < 9) {
      digitalWrite(verde, LOW);
      digitalWrite(amarelo, HIGH);
    }
    delay(500);
    digitalWrite(azul,LOW);
    delay(500);
    contador++;
  }

  digitalWrite(amarelo, LOW);
}
```

2)

Montagem e programa:



```
int a;
int b;
int opCode;
int saida;
int vermelho = 13;
int amarelo = 12;
int verde = 11;
int azul = 10;
int carryOut;
```

```
void setup() {
  Serial.begin(9600);
  pinMode(vermelho, OUTPUT);
  pinMode(amarelo, OUTPUT);
  pinMode(verde, OUTPUT);
  pinMode(azul, OUTPUT);
}
```

```
void loop() {
  carryOut = 0;
  if(Serial.available() > 0) {
    a = Serial.parseInt();
    b = Serial.parseInt();
    opCode = Serial.parseInt();
    switch(opCode){
      case 0:
        saida = portaand(a,b);
        break;
```

```

    case 1:
        saida = portaor(a,b);
        break;
    case 2:
        saida = portanot(a);
        break;
    case 3:
        saida = soma(a,b,0,carryOut);
        break;
    default:
        break;
}
if(a == 1) {
    digitalWrite(vermelho, HIGH);
}
else {
    digitalWrite(vermelho, LOW);
}

if(b == 1) {
    digitalWrite(amarelo, HIGH);
}
else {
    digitalWrite(amarelo, LOW);
}

if(saida == 1) {
    digitalWrite(verde, HIGH);
}
else {
    digitalWrite(verde, LOW);
}

if(carryOut == 1) {
    digitalWrite(azul, HIGH);
}
else {
    digitalWrite(azul, LOW);
}
}

int portanot(int a)
{
    return 1 - a;
}

int portaxor(int a, int b)

```

```
{  
    return(a^b);  
}
```

```
int portaor(int a, int b)  
{  
    return(a|b);  
}
```

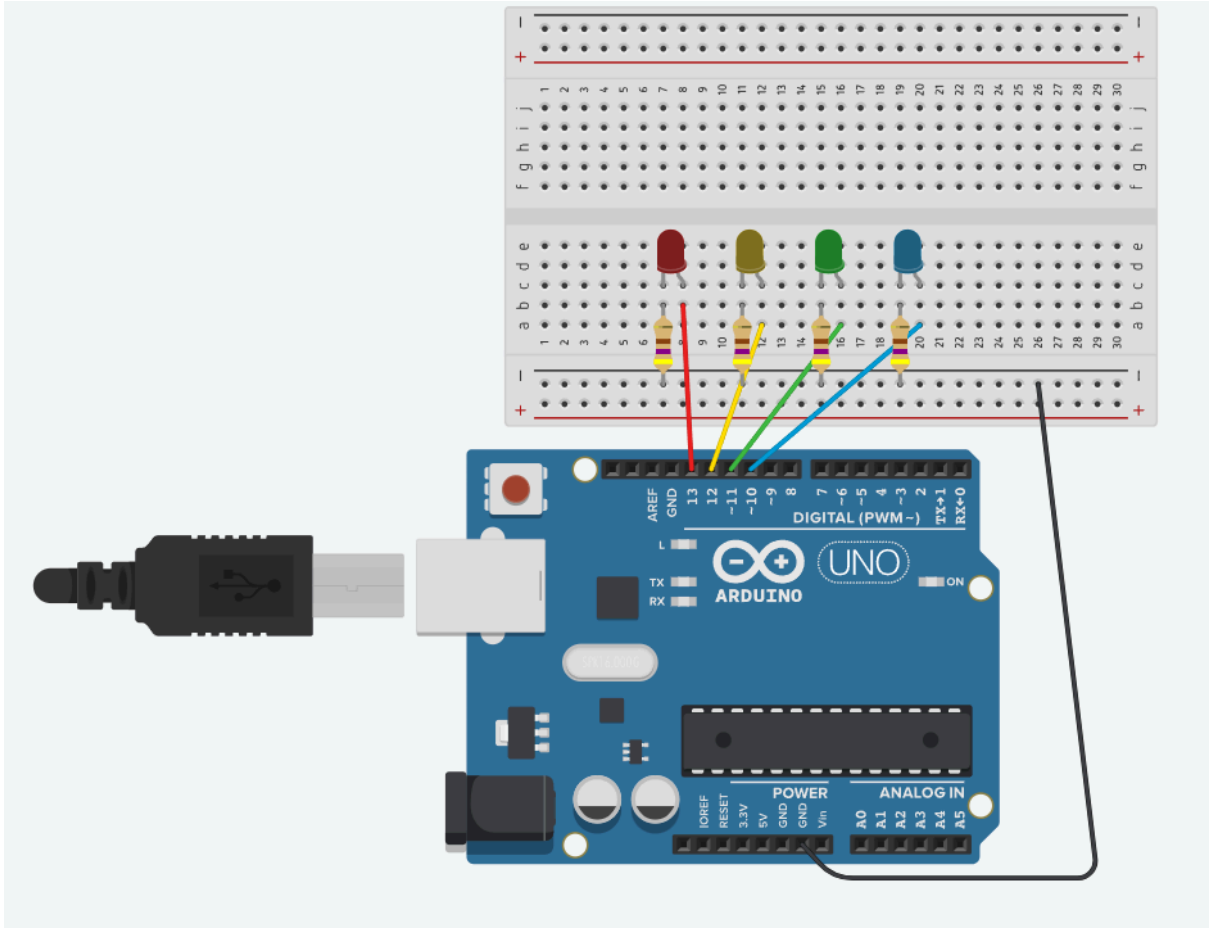
```
int portaand(int a, int b)  
{  
    return(a&b);  
}
```

```
int soma(int a, int b, int CI, int &CO) {  
    int saida = portaxor(portaxor(a,b),CI);  
    CO += portaor(portaand(portaxor(a,b), CI), portaand(a,b));  
  
    return saida;  
}
```

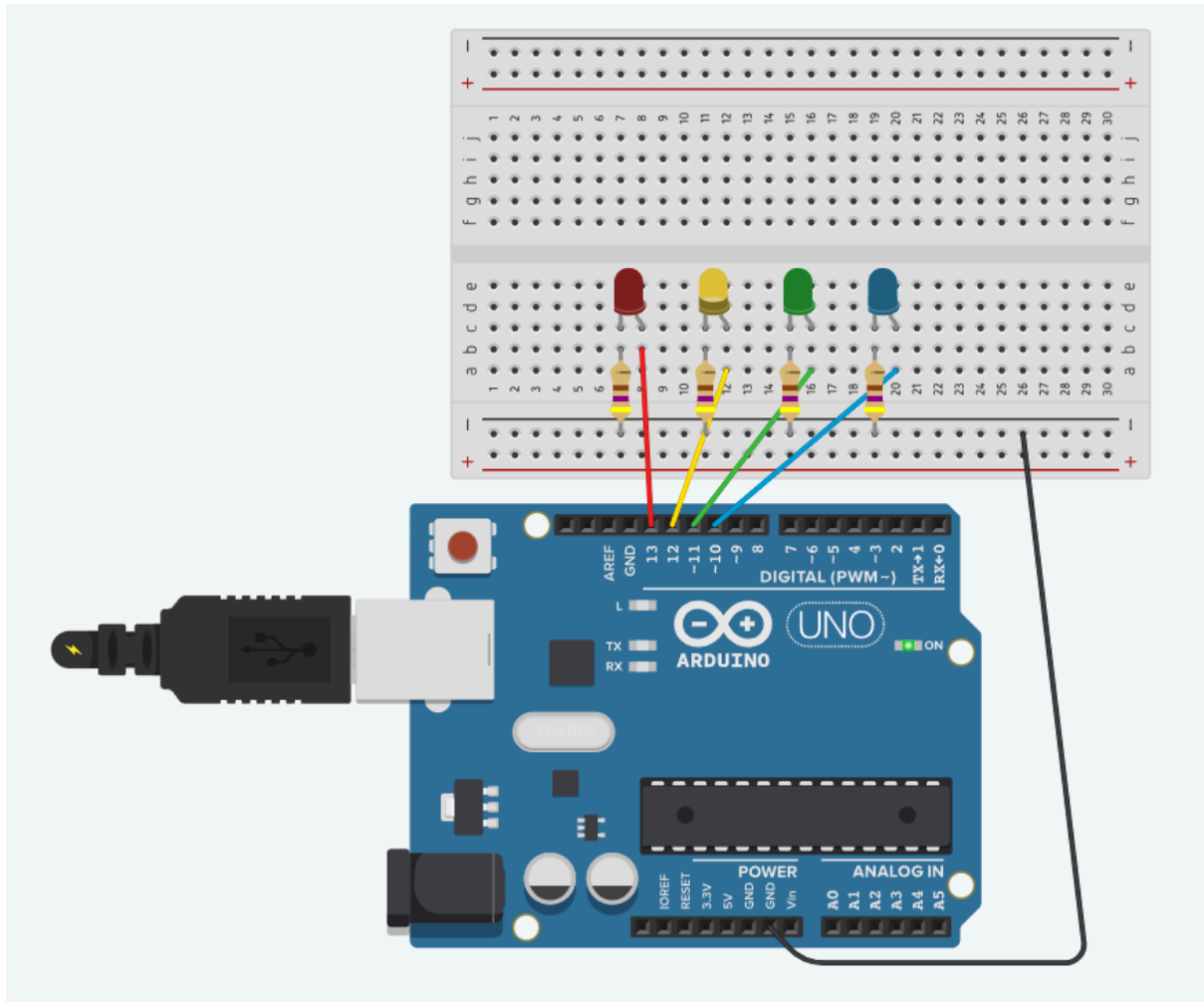
TESTE:
TABELA DE TESTE:

Instrução Realizada	Binário (a, b, Op.Code)	Valor em Hexa	Resultado em Binário
AND(A,B)	0 1 00	0x4	0
OR(A,B)	1 0 01	0x9	1
SOMA(A,B)	1 0 11	0xB	1
NOT(A)	0 0 10	0x2	1
SOMA(B,A)	1 0 00	0x8	0

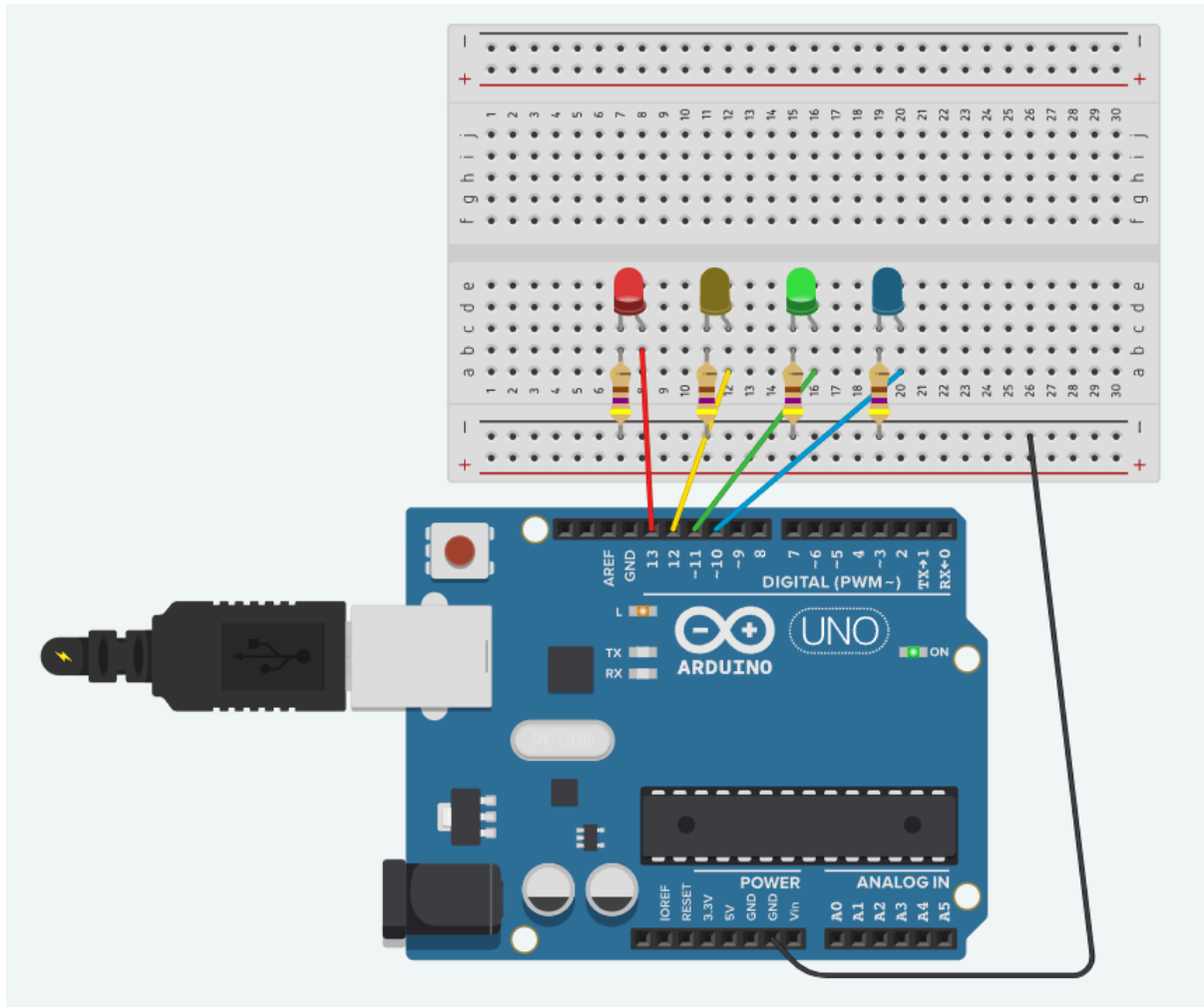
Início:



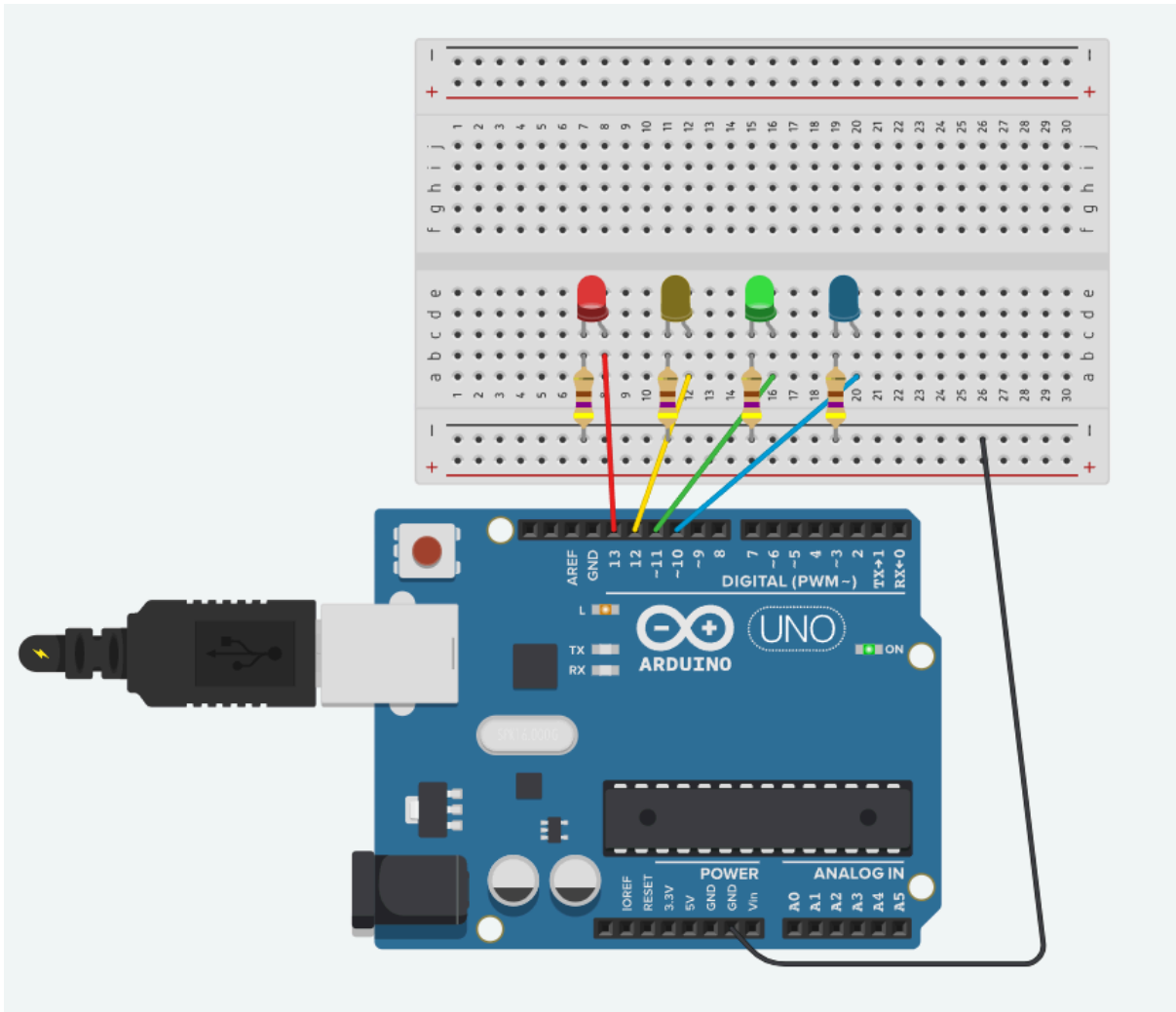
A=0,B=1,OP=0:



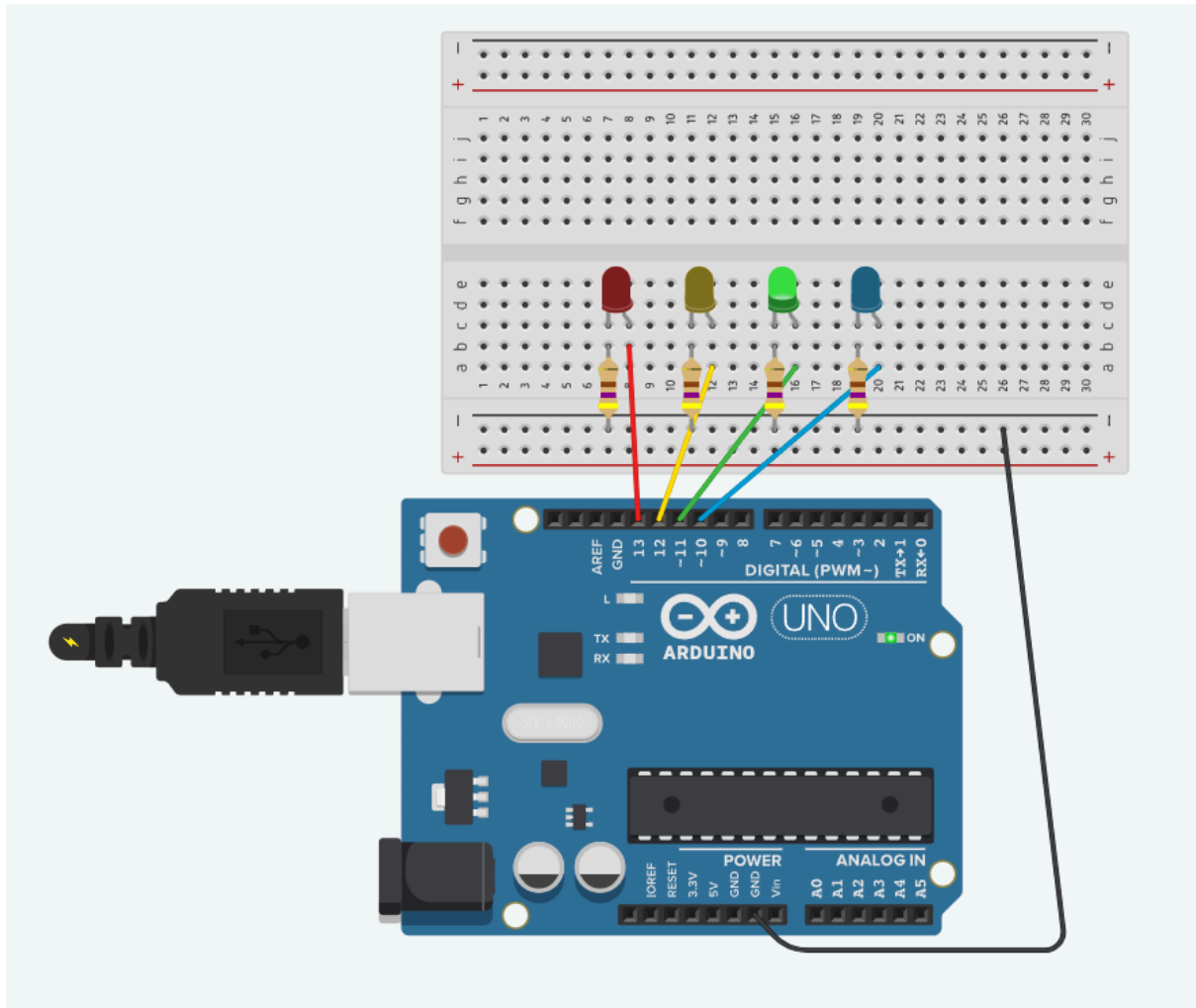
A=1;B=0;OP=1:



SOMA(A,B):



A = 0; NOT(A):



B = 1; AND(B,A):

