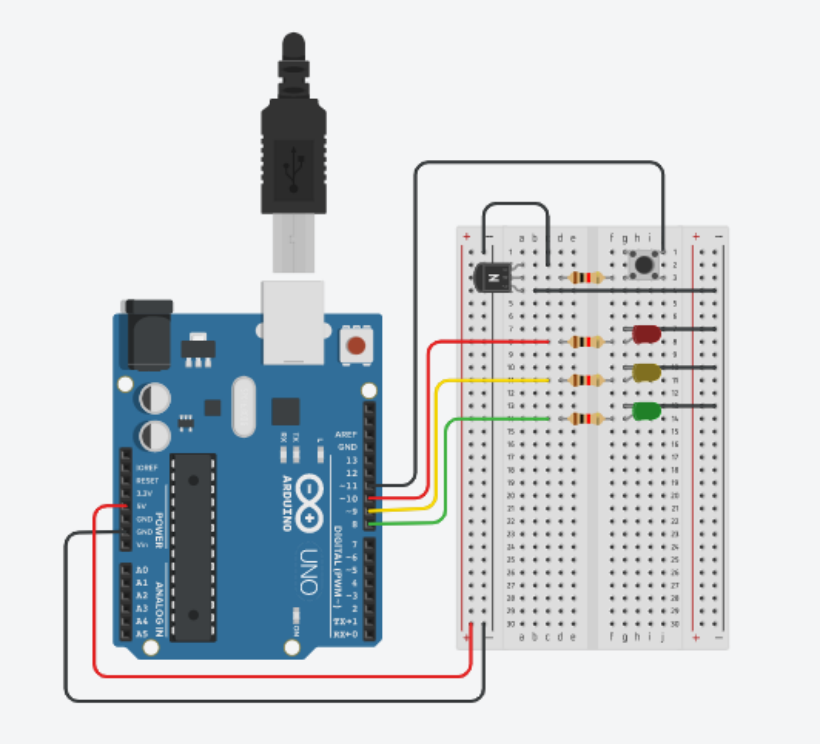
LED BLINK

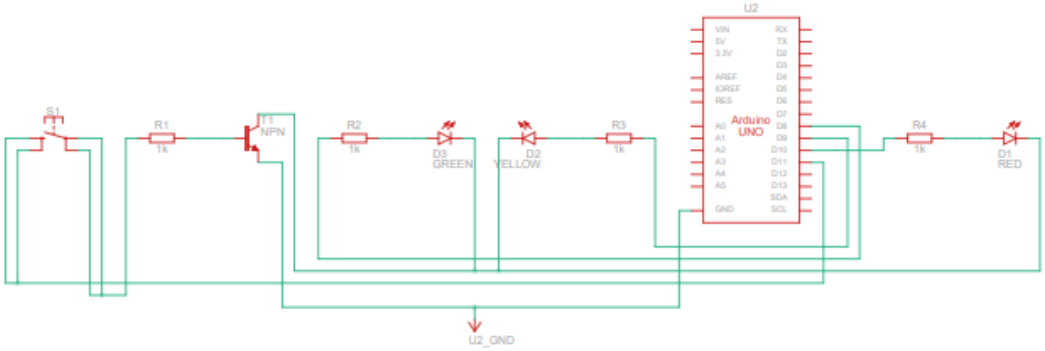
Hardware Required :

Nama	Kuantiti	Komponen
U2	1	Arduino Uno R3
R1, R2, R3, R4	4	1 kΩ Resistor
S1	1	Pushbutton
D1	1	Red LED
D2	1	Yellow LED
D3	1	Green LED
T1	1	NPN Transistor (BJT)

Circuit :



Schematic :



Code :

```
  // C++ code
//
void setup()
{
  pinMode(11, OUTPUT);
  pinMode(8, OUTPUT);
}

void loop()
{
  analogWrite(11,20);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(8, HIGH);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(8, LOW);
   delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(9, HIGH);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(9, LOW);
   delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(10, HIGH);
  delay(1000);// Wait for 1000 millisecond(s)
  digitalWrite(10, LOW);
}
```

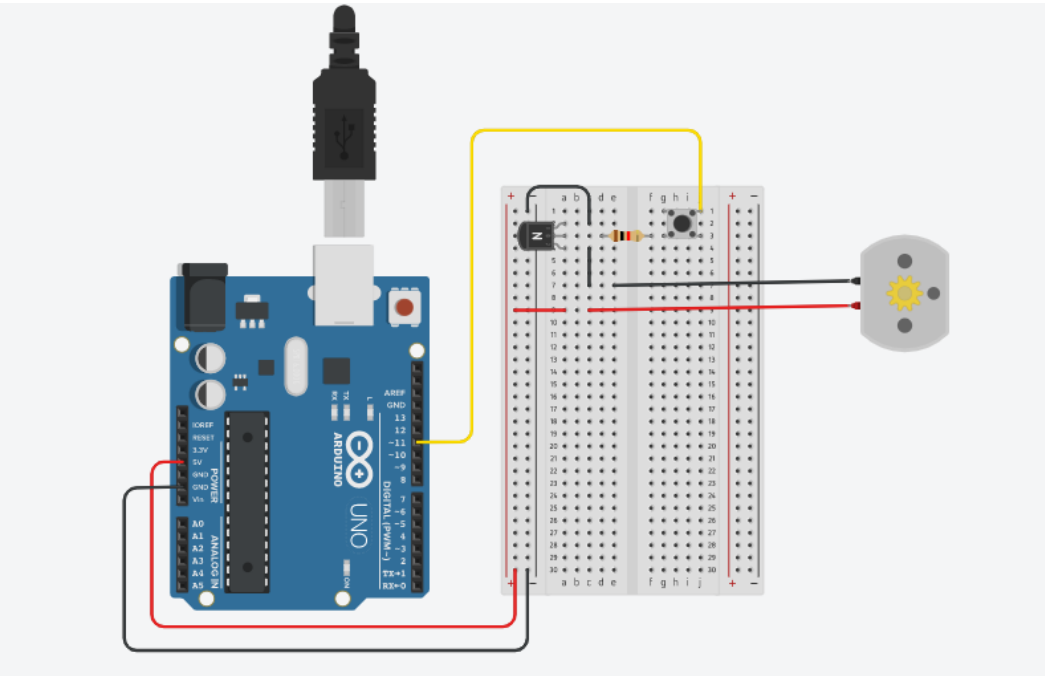
Tutorial (QR OR LINK) :

DC MOTOR

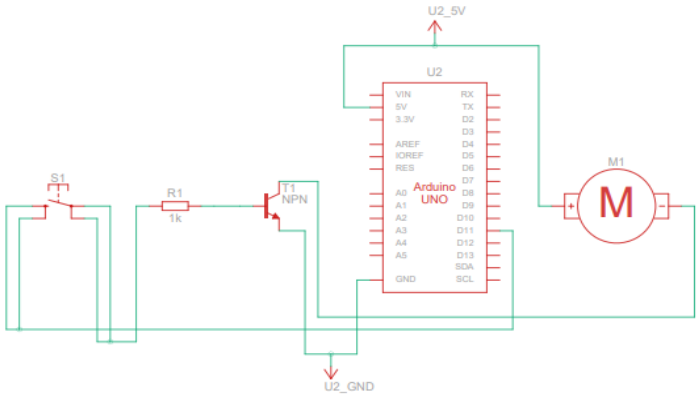
Hardware Required :

Nama	Kuantiti	Komponen
U2	1	Arduino Uno R3
T1	1	NPN Transistor (BJT)
R1	1	1 kΩ Resistor
S1	1	Pushbutton
M1	1	DC Motor

Circuit :



Schematic :



Code :

```
void setup()
{
  pinMode(11, OUTPUT);
}

void loop()
{
   analogWrite(11,20);
}
```

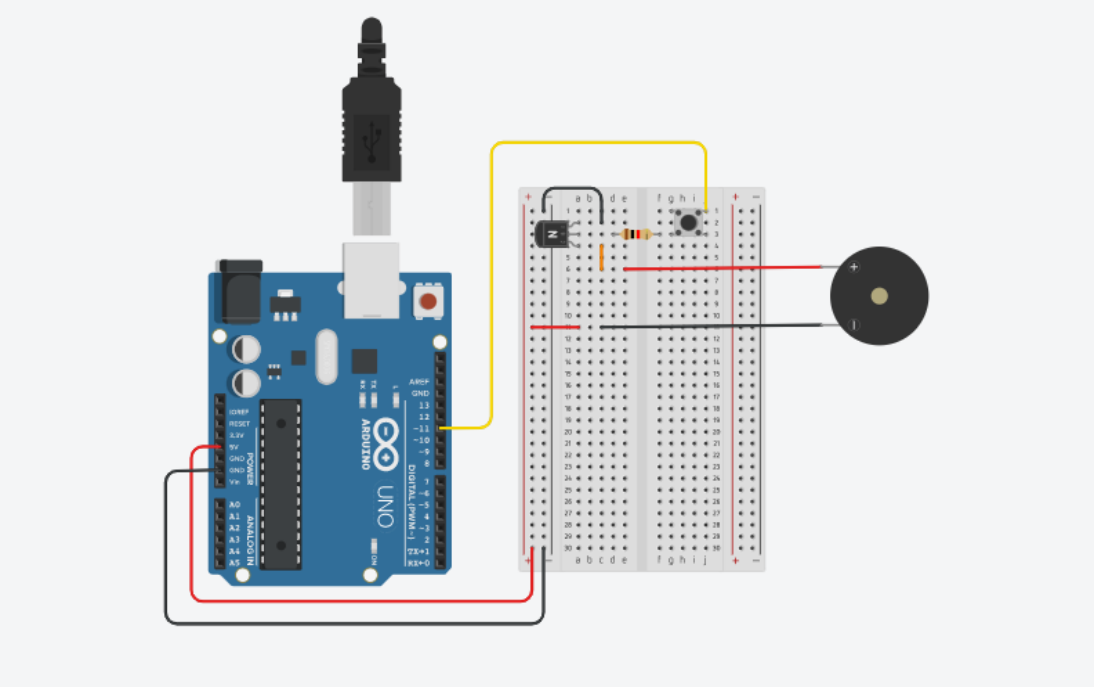
Tutorial (QR OR LINK) :

BUZZER

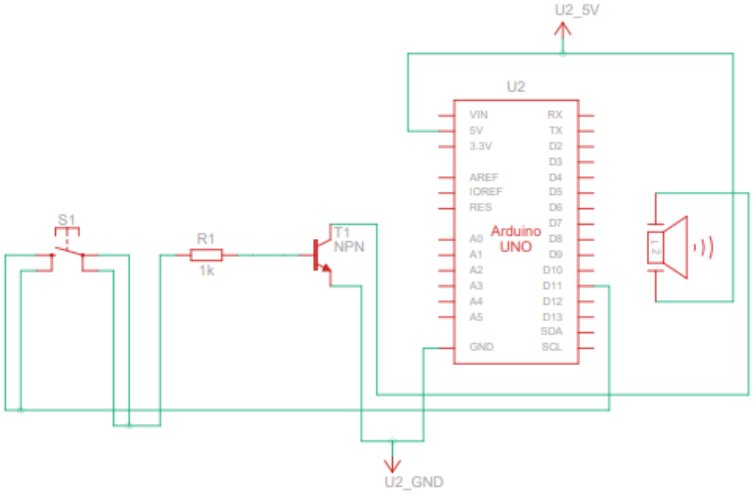
Hardware Required :

Nama	Kuantiti	Komponen
U2	1	Arduino Uno R3
T1	1	NPN Transistor (BJT)
R1	1	1 kΩ Resistor
S1	1	Pushbutton
PIEZO1	1	Piezo

Circuit :



Schematic :



Code :

```
int speakerPin = 11;

int length = 28; // the number of notes

char notes[] = "GGAGcB GGAGdc GGxecBA yyecdc";

int beats[] = { 2, 2, 8, 8, 8, 16, 1, 2, 2, 8, 8,8, 16, 1, 2,2,8,8,8,8,16, 1,2,2,8,8,8,16 };

int tempo = 150;

void playTone(int tone, int duration) {

for (long i = 0; i < duration * 1000L; i += tone * 2) {

  digitalWrite(speakerPin, HIGH);

  delayMicroseconds(tone);

  digitalWrite(speakerPin, LOW);

  delayMicroseconds(tone);

}

}
```

```
void playNote(char note, int duration) {

char names[] = {'C', 'D', 'E', 'F', 'G', 'A', 'B',

                'c', 'd', 'e', 'f', 'g', 'a', 'b',

                'x', 'y' };

int tones[] = { 1915, 1700, 1519, 1432, 1275, 1136, 1014,

                956,  834,  765,  593,  468,  346,  224,

                655 , 715 };

int SPEE = 5;

// play the tone corresponding to the note name

for (int i = 0; i < 17; i++) {

   if (names[i] == note) {
    int newduration = duration/SPEE;
     playTone(tones[i], newduration);

   }

}

}

void setup() {

pinMode(speakerPin, OUTPUT);

}

void loop() {

for (int i = 0; i < length; i++) {

   if (notes[i] == ' ') {

     delay(beats[i] * tempo); // rest

   } else {

     playNote(notes[i], beats[i] * tempo);
```

```
  }
  // pause between notes
  delay(tempo);
}
}
```

Tutorial (QR OR LINK) :