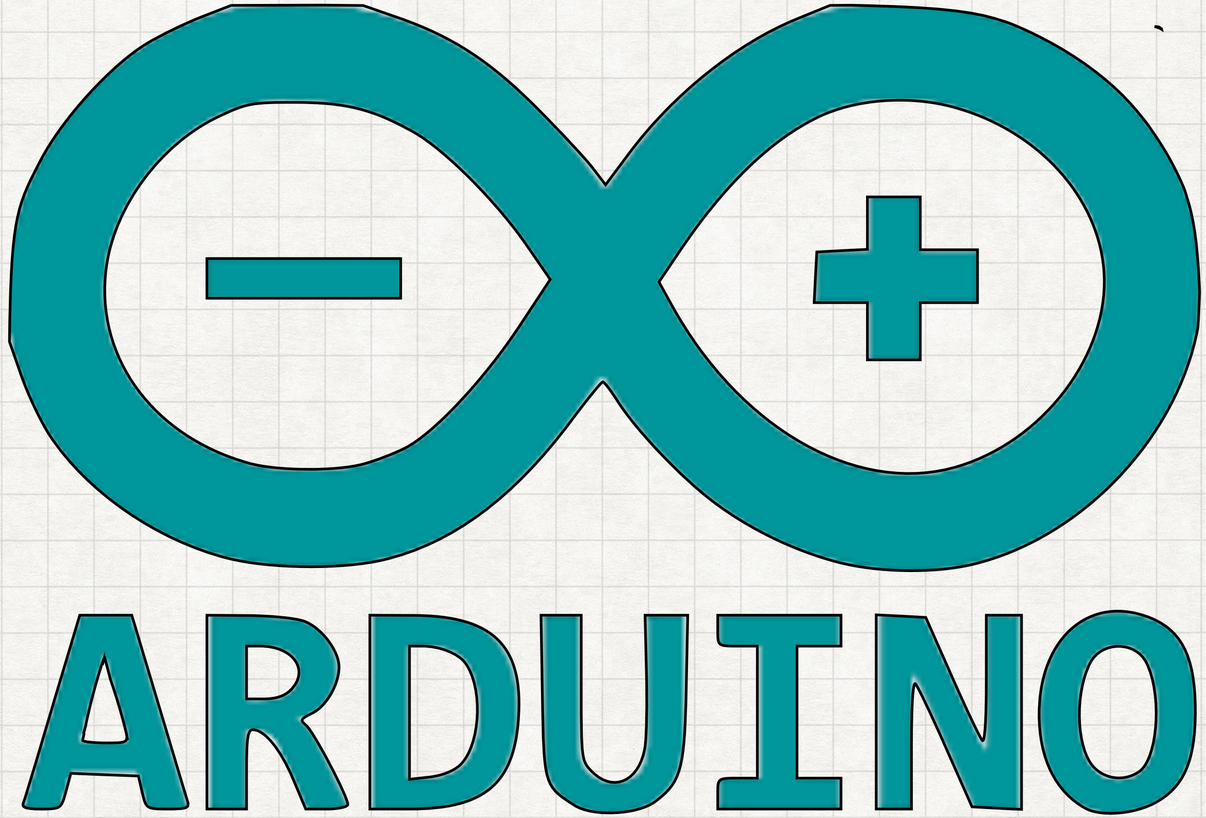
PROGETTO ARDUINO

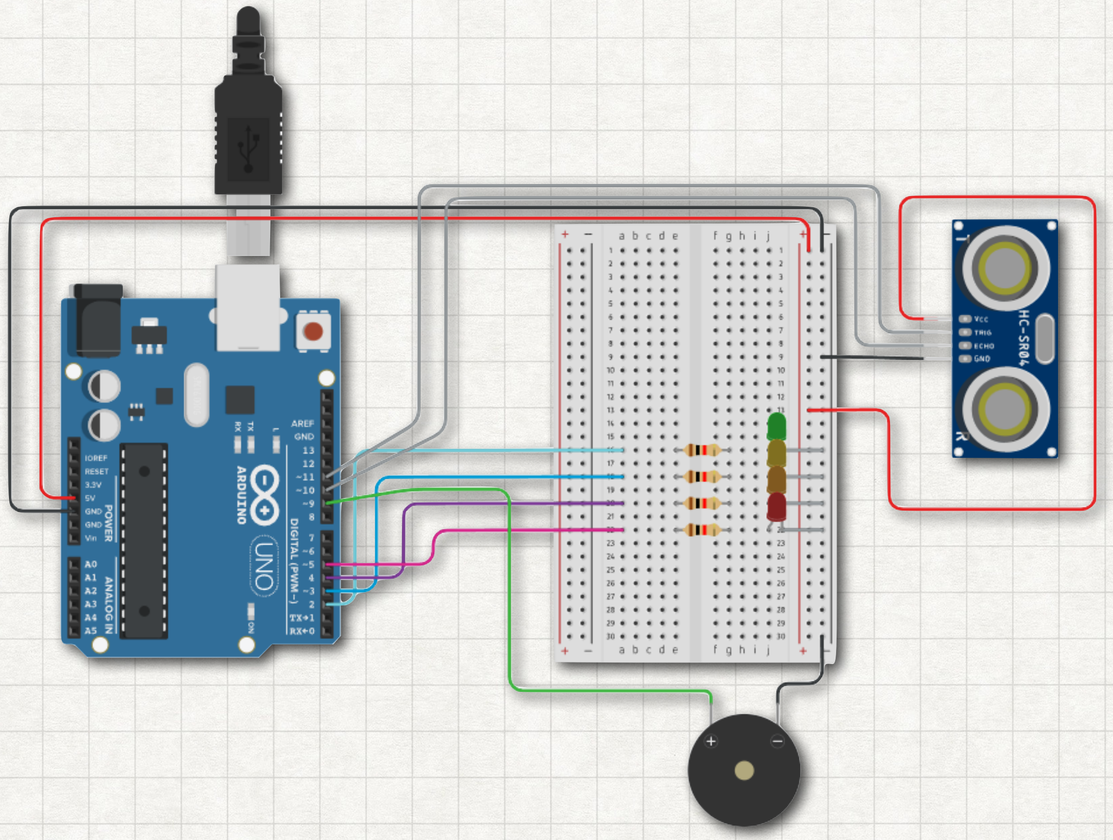
Striscia LED e Buzzer

con

Sensore Ultrasuono



IL CIRCUITO


HC-SR04
Vcc
TRIG
ECHO
GND
ARDUINO
UNO
POWER
ANALOG IN
DIGITAL (PWM~)

IL CODICE

(1)

```
#define TRIGGER_PIN 11
#define ECHO_PIN 10
#define BUZZER_PIN 9

// Definizione dei pin per i LED
#define LED1_PIN 2
#define LED2_PIN 3
#define LED3_PIN 4
#define LED4_PIN 5

void setup() {
  Serial.begin(9600);
  pinMode(TRIGGER_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);

  pinMode(LED1_PIN, OUTPUT);
  pinMode(LED2_PIN, OUTPUT);
  pinMode(LED3_PIN, OUTPUT);
  pinMode(LED4_PIN, OUTPUT);

  pinMode(BUZZER_PIN, OUTPUT);
}

void loop() {
  long duration, distance;

  // Genera un impulso sull'uscita del trigger
  digitalWrite(TRIGGER_PIN, LOW);
  delayMicroseconds(2);
  digitalWrite(TRIGGER_PIN, HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIGGER_PIN, LOW);

  // Misura il tempo necessario per il ritorno dell'eco
  duration = pulseIn(ECHO_PIN, HIGH);

  // Calcola la distanza in base al tempo misurato
  distance = duration * 0.034 / 2;

  // Mappa la distanza tra 3 e 330 cm a un valore tra 0 e 3
  int mapped_distance = map(distance, 3, 330, 0, 3);
```

(2)

```
  // Accende i LED in base alla distanza mappata
  if (mapped_distance == 0) {
    digitalWrite(LED1_PIN, HIGH);
    digitalWrite(LED2_PIN, LOW);
    digitalWrite(LED3_PIN, LOW);
    digitalWrite(LED4_PIN, LOW);
    digitalWrite(BUZZER_PIN, LOW); // Spegni il buzzer
  } else if (mapped_distance == 1) {
    digitalWrite(LED1_PIN, HIGH);
    digitalWrite(LED2_PIN, HIGH);
    digitalWrite(LED3_PIN, LOW);
    digitalWrite(LED4_PIN, LOW);
    digitalWrite(BUZZER_PIN, LOW); // Spegni il buzzer
  } else if (mapped_distance == 2) {
    digitalWrite(LED1_PIN, HIGH);
    digitalWrite(LED2_PIN, HIGH);
    digitalWrite(LED3_PIN, HIGH);
    digitalWrite(LED4_PIN, LOW);
    digitalWrite(BUZZER_PIN, LOW); // Spegni il buzzer
  } else {
    digitalWrite(LED1_PIN, HIGH);
    digitalWrite(LED2_PIN, HIGH);
    digitalWrite(LED3_PIN, HIGH);
    digitalWrite(LED4_PIN, HIGH);
    if (digitalRead(LED1_PIN) == HIGH && digitalRead(LED2_PIN) == LOW && digitalRead(LED3_PIN) == LOW && digitalRead(LED4_PIN) == LOW) {
      digitalWrite(BUZZER_PIN, HIGH); // Accendi il buzzer solo quando il LED1_PIN è acceso
    } else {
      digitalWrite(BUZZER_PIN, LOW); // Spegni il buzzer
    }
  }

  delay(200); // Aggiorna la misura ogni 200ms
}
```