// defines pins numbers

const int trigPin = 13;

const int echoPin = 12;

const int buzzerPin = 7;

const int ledPin = 8;

// defines variables

long duration;

int distance;

void setup() {

pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output

pinMode(echoPin, INPUT); // Sets the echoPin as an Input

pinMode(buzzerPin, OUTPUT); // Set buzzer - pin 9 as an output

pinMode(ledPin, OUTPUT);

Serial.begin(9600); // Starts the serial communication

}

void loop() {

// Clears the trigPin

digitalWrite(trigPin, LOW);

delayMicroseconds(2);

// Sets the trigPin on HIGH state for 10 micro seconds

digitalWrite(trigPin, HIGH);

delayMicroseconds(10);

digitalWrite(trigPin, LOW);

// Reads the echoPin, returns the sound wave travel time in microseconds

duration = pulseIn(echoPin, HIGH);

// Calculating the distance in centimeters

distance = duration\*0.034/2;

// Prints the distance on the Serial Monitor

Serial.print("Distance in centimeters: ");

Serial.println(distance);

if (distance < 20){

int brightness = map(distance, 4, 3, 0, 255); //range parameters

brightness = 255 - brightness;

analogWrite(ledPin, brightness);

int toneVol = map(distance, 4, 50, 0, 1000);

toneVol = 1000 - toneVol;

tone(buzzerPin, toneVol);

} else {

noTone(buzzerPin); // Stop sound...

digitalWrite(ledPin, LOW);

}

if(distance <= 4){

playMelody();

}

}

void playMelody(){

tone(buzzerPin, 1000); //piezo sound time

delay(800);

noTone(buzzerPin);

delay(300);

tone(buzzerPin, 1000);

delay(800);

noTone(buzzerPin);

delay(300);

tone(buzzerPin, 1000);

delay(800);

noTone(buzzerPin);

delay(300);

}