#include <Servo.h>

const int trigPin = 9;

const int echoPin = 10;

const int redLED = 2;

const int greenLED = 3;

const int blueLED = 4;

const int buzzer = 5;

Servo myServo;

long duration;

int distance;

void setup() {

  Serial.begin(9600);

  myServo.attach(6);

  pinMode(trigPin, OUTPUT);

  pinMode(echoPin, INPUT);

  pinMode(redLED, OUTPUT);

  pinMode(greenLED, OUTPUT);

  pinMode(blueLED, OUTPUT);

  pinMode(buzzer, OUTPUT);

}

void loop() {

  for (int angle = 0; angle <= 180; angle++) {

    myServo.write(angle);

    delay(15);

    distance = getDistance();

    sendData(angle, distance);

    updateAlerts(distance);

  }

  for (int angle = 180; angle >= 0; angle--) {

    myServo.write(angle);

    delay(15);

    distance = getDistance();

    sendData(angle, distance);

    updateAlerts(distance);

  }

}

int getDistance() {

  digitalWrite(trigPin, LOW);

  delayMicroseconds(2);

  digitalWrite(trigPin, HIGH);

  delayMicroseconds(10);

  digitalWrite(trigPin, LOW);

  duration = pulseIn(echoPin, HIGH);

  return duration \* 0.034 / 2;

}

void sendData(int angle, int distance) {

  Serial.print(angle);

  Serial.print(",");

  Serial.print(distance);

  Serial.println(".");

}

void updateAlerts(int dist) {

  // Turn off everything

  digitalWrite(redLED, LOW);

  digitalWrite(greenLED, LOW);

  digitalWrite(blueLED, LOW);

  digitalWrite(buzzer, LOW);

  if (dist <= 10) {

    digitalWrite(buzzer, HIGH);

    digitalWrite(redLED, HIGH);

  } else if (dist <= 20) {

    digitalWrite(redLED, HIGH);

  } else if (dist <= 30) {

    digitalWrite(greenLED, HIGH);

  } else if (dist <= 40) {

    digitalWrite(blueLED, HIGH);

  }

}