#include <SoftwareSerial.h>

#include <Servo.h>

SoftwareSerial SIM900(7, 8);

Servo gasValve;

int led = 2;

int buzpin = 11;

int sensor = A0;

int threshold = 300;  // Set proper threshold for gas leakage detection

int MQ2SensorValues = 0;

void setup() {

  pinMode(sensor, INPUT);

  pinMode(led, OUTPUT);

  pinMode(buzpin, OUTPUT);

  SIM900.begin(19200);

  gasValve.attach(5);  // Use pin 6 for servo instead of 9

  gasValve.write(0);   // Set initial position

  Serial.begin(19200);

  delay(10000);  // Wait for GSM module to initialize

}

void loop() {

  MQ2SensorValues = analogRead(sensor);

  Serial.println("Ur Home is Safe!");// Read from MQ-2 properly

  Serial.print("Gas Level: ");

  Serial.println(MQ2SensorValues);

  delay(2000);

  if (MQ2SensorValues > threshold) { // If gas is detected

    Serial.println("Gas Leakage Detected...!!");

    digitalWrite(led, HIGH);

    tone(buzpin, 100);

    delay(500);

    sendSMS();

    makeCall();

    closeGasValve();

    sendafterSMS();

    delay(5000);

  }

  else {

    Serial.println("No Gas Leakage Detected...");

    digitalWrite(led, LOW);

    noTone(buzpin);

  }

}

void sendSMS() {

  SIM900.print("AT+CMGF=1\r");

  delay(100);

  SIM900.println("AT+CMGS=\"+919150193890\""); // Change to actual number

  delay(100);

  Serial.println("SMS is sending");

  SIM900.println("Gas Leakage Detected! Please check immediately.");

  delay(100);

  SIM900.println((char)26);

  delay(5000);

}

void makeCall() {

  Serial.println("Calling emergency number...");

  SIM900.println("ATD+919150193890;");  // Change to actual number

  delay(30000);  // Call duration

  SIM900.println("ATH");  // Hang up

}

void closeGasValve() {

  Serial.println("Closing Gas Valve...");

  gasValve.write(180);  // Move servo to close regulator

  delay(2000);

}

void sendafterSMS() {

  SIM900.print("AT+CMGF=1\r");

  delay(100);

  SIM900.println("AT+CMGS=\"+919150193890\""); // Change to actual number

  delay(100);

  Serial.println("SMS is sending");

  SIM900.println("The gas valve is closed but please make sure it is closed or not. Stay alert and ensure safety!");

  delay(100);

  SIM900.println((char)26);

  delay(10000);

}