#include <SoftwareSerial.h>

#include <Wire.h>

#include <LiquidCrystal\_I2C.h>

LiquidCrystal\_I2C lcd(0x27,16,2); // set the LCD address to 0x27 for a 16 chars and 2 line display

SoftwareSerial mySerial(1, 2);

const int red = 10;

const int green = 9;

const int buzzer = 8;

const int flame = 7;

const int smoke = A0;

const int flasher1 = 11;

const int flasher2 = 12;

int flash\_rate=200;

int thresh= 200;

int status = true;

String alertMsg;

String mob1="+8801886009133"; // Enter first mobile number with country code

String mob2="+8801760875517"; // Enter second mobile number with country code

void setup()

{

pinMode(red, OUTPUT);

pinMode(flasher1,OUTPUT);

pinMode(flasher2,OUTPUT);

pinMode(green, OUTPUT);

pinMode(smoke,INPUT);

pinMode(flame,INPUT);

pinMode(buzzer, OUTPUT);

lcd.init(); // initialize the lcd

lcd.clear();

lcd.backlight();

mySerial.begin(9600); // Setting the baud rate of GSM Module

Serial.begin(9600); // Setting the baud rate of Serial Monitor (Arduino)

delay(100);

}

void siren(int buzzer){

for(int hz = 440; hz < 1000; hz++){

tone(buzzer, hz, 50);

delay(3);

}

for(int hz = 1000; hz > 440; hz--){

tone(buzzer, hz, 50);

delay(3);

}

for(int hz = 440; hz < 1000; hz++){

tone(buzzer, hz, 50);

delay(3);

}

for(int hz = 1000; hz > 440; hz--){

tone(buzzer, hz, 50);

delay(3);

}

for(int hz = 440; hz < 1000; hz++){

tone(buzzer, hz, 50);

delay(3);

}

for(int hz = 1000; hz > 440; hz--){

tone(buzzer, hz, 50);

delay(3);

}

}

void loop()

{

Serial.println("Gas Value: "+String(analogRead(smoke))+", Flame state: "+String(!digitalRead(flame)));

if (digitalRead(flame)== LOW || analogRead(smoke)>thresh) //Flame or Smoke detected

{

digitalWrite(green, LOW);

digitalWrite(red, HIGH);

lcd.setCursor(1,0);

lcd.print(" ACCIDENT");

siren(buzzer);

digitalWrite(buzzer, HIGH);

digitalWrite(flasher1, HIGH);

digitalWrite(flasher2, LOW);

delay(flash\_rate);

digitalWrite(flasher1, LOW);

digitalWrite(flasher2, HIGH);

delay(flash\_rate);

digitalWrite(flasher1, HIGH);

digitalWrite(flasher2, LOW);

delay(flash\_rate);

digitalWrite(flasher1, LOW);

digitalWrite(flasher2, HIGH);

delay(flash\_rate);

digitalWrite(flasher1, HIGH);

digitalWrite(flasher2, LOW);

delay(flash\_rate);

digitalWrite(flasher1, LOW);

digitalWrite(flasher2, HIGH);

delay(flash\_rate);

digitalWrite(flasher1, HIGH);

digitalWrite(flasher2, LOW);

delay(flash\_rate);

digitalWrite(flasher1, LOW);

digitalWrite(flasher2, HIGH);

delay(flash\_rate);

digitalWrite(flasher1, HIGH);

digitalWrite(flasher2, LOW);

delay(flash\_rate);

digitalWrite(flasher1, LOW);

digitalWrite(flasher2, HIGH);

delay(flash\_rate);

digitalWrite(flasher1, HIGH);

digitalWrite(flasher2, LOW);

delay(flash\_rate);

digitalWrite(flasher1, LOW);

digitalWrite(flasher2, HIGH);

digitalWrite(flasher2, LOW);

if(digitalRead(flame)== LOW){

lcd.setCursor(2, 1);

lcd.write(1);

lcd.setCursor(4,1);

alertMsg= "FIRE HIGH";

lcd.print(alertMsg);

lcd.setCursor(4,0);

lcd.print("SMOKE:"+String(analogRead(smoke)));

}

if(analogRead(smoke)>thresh){

lcd.setCursor(2, 0);

lcd.write(1);

lcd.setCursor(4,0);

alertMsg= "SMOKE HIGH";

lcd.print(alertMsg);

lcd.setCursor(4,1);

lcd.print("FIRE:"+String(digitalRead(flame)==LOW?"HIGH":"LOW"));

}

Serial.println(alertMsg); //print on lcd

if(status){ // run 1 time only when detects the fire after fire detection

status = false;

String msg= "Alert Type: "+alertMsg;

SendMessage(msg,mob1);

delay(000);

SendMessage(msg,mob2);

}

}

else{

status = true;

lcd.setCursor(4,0);

lcd.print("SMOKE:"+String(analogRead(smoke)));

lcd.setCursor(4,1);

lcd.print("FIRE:"+String(digitalRead(flame)==LOW?"HIGH":"LOW"));

digitalWrite(flasher1, LOW);

digitalWrite(flasher2, LOW);

digitalWrite(red, LOW);

digitalWrite(buzzer, LOW);

noTone(buzzer);

digitalWrite(green, HIGH);

}

delay(300);

lcd.clear();

}

void SendMessage(String msg, String mob)

{

Serial.println(msg); //Message sent to Mobile

// digitalWrite(flasher1, HIGH);

// digitalWrite(flasher2, HIGH);

mySerial.println("AT+CMGF=1"); //Sets the GSM Module in Text Mode

delay(1000); // Delay of 1000 milli seconds or 1 second

mySerial.println("AT+CMGS=\""+mob+"\"\r"); // Replace x with mobile number

delay(1000);

mySerial.println(msg);// The SMS text you want to send

delay(100);

mySerial.println((char)26);// ASCII code of CTRL+Z

delay(1000);

}