#include <LiquidCrystal.h>

LiquidCrystal lcd(6, 7, 8, 9, 10, 11);

float gasPin = A0;

float gasLevel;

int ledPin = 2;

int buttonPin = 3;

int buzzPin = 4;

int buttonState;

int fan = 5;

void setup(){

pinMode(ledPin, OUTPUT);

pinMode(buttonPin, INPUT);

pinMode(gasPin,INPUT);

pinMode(fan,OUTPUT);

Serial.begin(9600);

lcd.begin(16, 2);

lcd.setCursor(0,0);

lcd.print(" Welcome");

lcd.setCursor(0,2);

lcd.print("PNT2022TMID51246");

delay(500);

lcd.clear();

}

void loop(){

// Read the value from gas sensor and button

gasLevel = analogRead(gasPin);

buttonState = digitalRead(buttonPin);

// call the function for gas detection and button work

gasDetected(gasLevel);

buzzer(gasLevel);

exhaustFanOn(buttonState);

}

// Gas Leakage Detection & Automatic Alarm and Fan ON

void gasDetected(float gasLevel){

if(gasLevel >= 200){

digitalWrite(buzzPin,HIGH);

digitalWrite(ledPin,HIGH);

digitalWrite(fan,HIGH);

lcd.setCursor(0,0);

lcd.print("GAS:");

lcd.print(gasLevel);

lcd.setCursor(0,2);

lcd.print("FAN ON");

delay(1000);

lcd.clear();

}else{

digitalWrite(ledPin,LOW);

digitalWrite(buzzPin,LOW);

digitalWrite(fan,LOW);

lcd.setCursor(0,0);

lcd.print("GAS:");

lcd.print(gasLevel);

lcd.setCursor(0,2);

lcd.print("FAN OFF");

delay(100);

lcd.clear();

}

}

//BUZZER

void buzzer(float gasLevel){

if(gasLevel>=200)

{

for(int i=0; i<=30; i=i+10)

{

tone(4,i);

delay(400);

noTone(4);

delay(400);

}

}

}

// Manually Exhaust FAN ON

void exhaustFanOn(int buttonState){

if(buttonState == HIGH){

digitalWrite(fan,HIGH);

lcd.setCursor(0,0);

lcd.print("Button State:");

lcd.print(buttonState);

lcd.setCursor(0,2);

lcd.print("FAN ON");

delay(10000);

lcd.clear();

}

}