#include <Wire.h>

#include <LiquidCrystal\_I2C.h>

#include "DHT.h"

#define DHTPIN 12

#define DHTTYPE DHT11

DHT dht(DHTPIN, DHTTYPE);

LiquidCrystal\_I2C lcd(0x27, 16, 2);

int SETPOINT = 34;

int THRESHOLD = 01;

boolean a=LOW,b=HIGH;

float h=0,t=0;

const int ledPin = 3;

long previousMillis = 0;

long interval = 1000; //Read sensor each second

int upPin = 7;

int downPin = 6;

int enterPin = 5;

int upPinStatePrev = 0;

int downPinStatePrev = 0;

int enterPinStatePrev = 0;

int upPinState = 0;

int downPinState = 0;

int enterPinState = 0;

int state = 1;

int statePrev = state;

void setup() {

lcd.begin();

lcd.setBacklight((uint8\_t)1);

pinMode(ledPin, OUTPUT);

pinMode(upPin, INPUT);

pinMode(downPin, INPUT);

pinMode(enterPin, INPUT);

dht.begin();//Start DHT11 sensor

digitalWrite(ledPin,LOW);

Serial.begin(9600);

}

void loop(){

 upPinStatePrev = upPinState;

 upPinState = digitalRead (upPin);

 downPinStatePrev = downPinState;

 downPinState = digitalRead (downPin);

 enterPinStatePrev = enterPinState;

 enterPinState = digitalRead (enterPin);

 switch (state) {

 case 1:

 lcd.setCursor(0,0);

 lcd.print("SETPOINT = ?");

 lcd.setCursor(0,1);

 lcd.print(SETPOINT);

 if (upPinState == HIGH && upPinStatePrev == LOW){

 SETPOINT = SETPOINT + 1;

 }

 if (downPinState == HIGH && downPinStatePrev == LOW){

 SETPOINT = SETPOINT - 1;

 }

 if (enterPinState == HIGH && enterPinStatePrev == LOW){

 lcd.clear();

 state = 2;

 break;

 }

 break;

 case 2:

 lcd.setCursor(0,0);

 lcd.print("THRESHOLD = ?");

 lcd.setCursor(0,1);

 lcd.print(THRESHOLD);

 if (upPinState == HIGH && upPinStatePrev == LOW){

 THRESHOLD = THRESHOLD + 1;

 }

 if (downPinState == HIGH && downPinStatePrev == LOW){

 THRESHOLD = THRESHOLD - 1;

 }

 if (enterPinState == HIGH && enterPinStatePrev == LOW){

 lcd.clear();

 state = 3;

 break;

 }

 break;

 case 3:

 lcd.setCursor(0,0);

 lcd.print("TEMP =");

 lcd.setCursor(0,1);

 lcd.print("SET =");

 lcd.setCursor(7,0);

 lcd.print(t);

 lcd.setCursor(7,1);

 lcd.print(SETPOINT);

 unsigned long currentMillis = millis();//time elapsed

 if(currentMillis - previousMillis > interval){

 previousMillis = currentMillis; //"Last time is now"

 t = dht.readTemperature(true);

 if(t>=SETPOINT + THRESHOLD && a==LOW){

 digitalWrite(ledPin,HIGH);//Active LED

 a=HIGH;

 b=LOW;

 }

 if(t<=SETPOINT - THRESHOLD &&b==LOW){

 digitalWrite(ledPin,LOW);

 a=LOW;

 b=HIGH;

 }

 }

 if (enterPinState == HIGH && enterPinStatePrev == LOW){

 lcd.clear();

 state = 1;

 break;

 }

 }

}