#include <LiquidCrystal.h>//lcd

#include <stdio.h>//pf sf

#include <SoftwareSerial.h>//serial communication

#include <Wire.h>

#include "dht.h"

SoftwareSerial mySerial(8, 9);//gsm connected to 8 9 pins

LiquidCrystal lcd(6, 7, 5, 4, 3, 2);//lcd connected to 6 7 5 4 3 2 pins

#include <Adafruit\_BMP085.h>

#define seaLevelPressure\_hPa 1013.25

Adafruit\_BMP085 bmp;

#define dht\_apin A0//bme is connected to A0 pin

dht DHT;

int mq3 = 10;//connected to 10th pin

int buzzer = 13;//connected to 13th pin

unsigned char rcv,count,gchr='x',gchr1='x',robos='s';//variables

char rcvmsg[10],pastnumber[11];

//char pastnumber1[11],pastnumber2[11];//pastnumber3[11];

int humc=0,tempc=0;

String inputString = ""; // a string to hold incoming data

boolean stringComplete = false; // whether the string is complete

void okcheck()//to check gsm connection is there or not

{

unsigned char rcr;

do{

rcr = Serial.read();

}while(rcr != 'K');

}

void okcheck1()//to check whether wifi connection is der or not

{

unsigned char rcr;

do{

rcr = mySerial.read();

}while(rcr != 'K');

}

void things\_send() // To send the data to the thing speak cloud

{

unsigned char recr;

mySerial.write("AT+CIPMUX=1\r\n");delay(2000);

mySerial.write("AT+CIPSTART=4,\"TCP\",\"184.106.153.149\",80\r\n");delay(4000); //OK LINKED

mySerial.write("AT+CIPSEND=4,77\r\n"); delay(3000);

mySerial.write("GET https://api.thingspeak.com/update?api\_key=U1IJMX1A49ZDAS5Y&");

} // we send the information through the api key

void things\_done()

{

mySerial.write("\r\n\r\n"); delay(4000);

}

void beep()//To ON and OFF the Buzzer

{

digitalWrite(buzzer,LOW);delay(1000);delay(1000);digitalWrite(buzzer,HIGH);

}

void setup() //To declare which works as input and which works as output

{

Serial.begin(9600);serialEvent();

mySerial.begin(9600);//serial communication takes place at 9600 baud rate

pinMode(mq3, INPUT); // mq3 is input

pinMode(buzzer, OUTPUT);// buzzer is output

digitalWrite(buzzer, HIGH);

lcd.begin(16, 2);lcd.cursor();

lcd.print(" Air Quality");

delay(1500);

if(!bmp.begin()) // BME is working or not

{

lcd.clear();

lcd.print("Could not find BMP085");// sensor, check wiring!");

while (1) {}

}

mySerial.write("AT\r\n"); delay(2000);

mySerial.write("ATE0\r\n"); okcheck1();delay(2000);

mySerial.write("AT+CWMODE=3\r\n"); delay(2000);

mySerial.write("AT+CWJAP=\"iotserver\",\"iotserver123\"\r\n");

okcheck1();

mySerial.write("AT+CIPMUX=1\r\n");delay(3000);

// To enable the wifi ,These are used to set the username of hotspot as iotserver and password as iotserver 123

lcd.clear();

lcd.print("Connected"); // “connected “ is printed on lcd screen which indicates that wifi is connected to our mobile hotspot

delay(1500);

gsminit();

delay(1500);

lcd.clear();

lcd.setCursor(0,0);

lcd.print("T:"); //2-3-4-5-6,0

lcd.setCursor(7,0);

lcd.print("H:"); //9,0

lcd.setCursor(0,1);

lcd.print("MQ:"); //3-4-5-6,1

lcd.setCursor(7,1);

lcd.print("P:"); //9,0

}

// Temperature ,pressure ,humidity,mq3 status is printed on the lcd screen

int hbtc=0,hbtc1=0,rchkr=0;

int pressure=0;

int cntl\_m=0;

int mq3s=0;

void loop() // we write the logic in the void loop

{

tempc = bmp.readTemperature(); delay(100);

//humc = bmp.readHumidity(); delay(100);

humc = (tempc + 34);

lcd.setCursor(2,0);convertl(tempc);

lcd.setCursor(9,0);convertl(humc);

if(tempc > 45) // If the temperature is more than 45 degrees we will get a beep sound and the temperature value is send to the cloud and also we will get a message to the registered mobile number.

{

beep();

delay(4000);

Serial.write("AT+CMGS=\"");

Serial.write(pastnumber);

Serial.write("\"\r\n"); delay(3000);

Serial.write("High Temp:");Serial.print(tempc);

Serial.write(0x1A);

delay(3000);

lcd.setCursor(15,1);lcd.write('1');

things\_send();

mySerial.write("field1=");converts1(tempc);

things\_done();

delay(3000);

}

if(humc >= 95) // same for humidity if its greater than 95 we vl get a beep sound and value is send to the cloud and we will get a msg to the registered mobile number.

{

beep();

delay(4000);

Serial.write("AT+CMGS=\"");

Serial.write(pastnumber);

Serial.write("\"\r\n"); delay(3000);

Serial.write("High Hum:");Serial.print(humc);

Serial.write(0x1A);

delay(3000);

lcd.setCursor(15,1);lcd.write('2');

things\_send();

mySerial.write("field2=");converts1(humc);

things\_done();

delay(3000);

}

if(digitalRead(mq3) == LOW) // if any harmful gas is detected ,We will get a beep sound and The status of mcq is send to the cloud and we will get an alert message.

{

lcd.setCursor(3,1);lcd.print("ON ");

mq3s=1;

beep();

delay(4000);

Serial.write("AT+CMGS=\"");

Serial.write(pastnumber);

Serial.write("\"\r\n"); delay(3000);

Serial.write("Mq3-ON\r\n");

Serial.write(0x1A);

delay(3000);

lcd.setCursor(15,1);lcd.write('3');

things\_send();

mySerial.write("field3=00100");//converts1(humc);

things\_done();

delay(3000);

}

if(digitalRead(mq3) == HIGH) // if there is no harmful gas it prints that mcq is OFF

{

lcd.setCursor(3,1);lcd.print("OFF ");

mq3s=0;

}

pressure = bmp.readPressure();

pressure = (pressure / 29);

/\*

if(pressure < 20)

{

pressure = (pressure + 915);

}

\*/

lcd.setCursor(9,1);convertl(pressure);

/\*

if(pressure > 25000)

{

pressure = (pressure - 28700);

}

\*/

if(pressure >= 1250) // if pressure is greater than 1250 we will get a beep sound and the data is send to the cloud and we will get a message to the registered mobile number which indicates the presuure value

{

beep();

delay(4000);

Serial.write("AT+CMGS=\"");

Serial.write(pastnumber);

Serial.write("\"\r\n"); delay(3000);

Serial.write("High Pressure:");Serial.print(pressure);Serial.print("hpa\r\n");

Serial.write(0x1A);

delay(3000);

lcd.setCursor(15,1);lcd.write('4');

things\_send();

mySerial.write("field4=");converts1(pressure);

things\_done();

delay(3000);

}

cntl\_m++;

if(cntl\_m >= 200)

{cntl\_m=0;

delay(4000);

Serial.write("AT+CMGS=\"");

Serial.write(pastnumber);

Serial.write("\"\r\n"); delay(3000);

Serial.write("T:");Serial.print(tempc);

Serial.write(" H:");Serial.print(humc);

Serial.write(" P:");Serial.print(pressure);

Serial.print("hpa ");

if(mq3s == 1){Serial.print(" Mq3=ON ");}

if(mq3s == 0){Serial.print(" Mq3=OFF ");}

Serial.write(0x1A);

delay(3000);

lcd.setCursor(15,1);lcd.write('1');

things\_send();

mySerial.write("field1=");converts1(tempc);

things\_done();

delay(30000);

lcd.setCursor(15,1);lcd.write('2');

things\_send();

mySerial.write("field2=");converts1(humc);

things\_done();

delay(30000);

lcd.setCursor(15,1);lcd.write('3');

things\_send();

mySerial.write("field3=");

if(mq3s == 1){mySerial.write("00100");}

if(mq3s == 1){mySerial.write("00000");}//converts1(pressure);

things\_done();

delay(30000);delay(10000);

lcd.setCursor(15,1);lcd.write('4');

things\_send();

mySerial.write("field4=");converts1(pressure);

things\_done();

lcd.setCursor(15,1);lcd.write(' ');

}

}

// all are user defined function definitions

void serialEvent()

{

while (Serial.available())

{

char inChar = (char)Serial.read();

if(inChar == '\*')

{

gchr = Serial.read();

//gchr = 's';

}

}

}

/\*

void serialEvent()

{

while (Serial.available())

{

char inChar = (char)Serial.read();

if(inChar == '\*')

{

gchr = Serial.read();

}

if(inChar == '#')

{

gchr1 = Serial.read();

}

}

}\*/

int readSerial(char result[])

{

int i = 0;

while (1)

{

while (Serial.available() > 0)

{

char inChar = Serial.read();

if (inChar == '\n')

{

result[i] = '\0';

Serial.flush();

return 0;

}

if (inChar != '\r')

{

result[i] = inChar;

i++;

}

}

}

}

void gsminit()

{

Serial.write("AT\r\n"); okcheck();

Serial.write("ATE0\r\n"); okcheck();

Serial.write("AT+CMGF=1\r\n"); okcheck();

Serial.write("AT+CNMI=1,2,0,0\r\n"); okcheck();

Serial.write("AT+CSMP=17,167,0,0\r\n"); okcheck();

lcd.clear();

lcd.print("SEND MSG STORE");

lcd.setCursor(0,1);

lcd.print("MOBILE NUMBER");

do{

rcv = Serial.read();

}while(rcv != '\*');

readSerial(pastnumber);pastnumber[10] = '\0';

/\*

pastnumber1[0] = pastnumber[0];pastnumber1[1] = pastnumber[1];pastnumber1[2] = pastnumber[2];pastnumber1[3] = pastnumber[3];pastnumber1[4] = pastnumber[4];pastnumber1[5] = pastnumber[5];

pastnumber1[6] = pastnumber[6];pastnumber1[7] = pastnumber[7];pastnumber1[8] = pastnumber[8];pastnumber1[9] = pastnumber[9];pastnumber1[10] = '\0';

\*/

/\*

pastnumber3[0] = pastnumber[20];pastnumber3[1] = pastnumber[21];pastnumber3[2] = pastnumber[22];pastnumber3[3] = pastnumber[23];pastnumber3[4] = pastnumber[24];pastnumber3[5] = pastnumber[25];

pastnumber3[6] = pastnumber[26];pastnumber3[7] = pastnumber[27];pastnumber3[8] = pastnumber[28];pastnumber3[9] = pastnumber[29];pastnumber3[10] = '\0';

\*/

lcd.clear();

lcd.print(pastnumber);

delay(4000); delay(5000);

Serial.write("AT+CMGS=\"");

Serial.write(pastnumber);

Serial.write("\"\r\n"); delay(3000);

Serial.write("Reg\r\n");

Serial.write(0x1A);

delay(4000); delay(5000);

}

void converts(unsigned int value)

{

unsigned int a,b,c,d,e,f,g,h;

a=value/10000;

b=value%10000;

c=b/1000;

d=b%1000;

e=d/100;

f=d%100;

g=f/10;

h=f%10;

a=a|0x30;

c=c|0x30;

e=e|0x30;

g=g|0x30;

h=h|0x30;

Serial.write(a);

Serial.write(c);

Serial.write(e);

Serial.write(g);

Serial.write(h);

}

void converts1(unsigned int value)

{

unsigned int a,b,c,d,e,f,g,h;

a=value/10000;

b=value%10000;

c=b/1000;

d=b%1000;

e=d/100;

f=d%100;

g=f/10;

h=f%10;

a=a|0x30;

c=c|0x30;

e=e|0x30;

g=g|0x30;

h=h|0x30;

mySerial.write(a);

mySerial.write(c);

mySerial.write(e);

mySerial.write(g);

mySerial.write(h);

}

void convertl(unsigned int value)

{

unsigned int a,b,c,d,e,f,g,h;

a=value/10000;

b=value%10000;

c=b/1000;

d=b%1000;

e=d/100;

f=d%100;

g=f/10;

h=f%10;

a=a|0x30;

c=c|0x30;

e=e|0x30;

g=g|0x30;

h=h|0x30;

lcd.write(a);

lcd.write(c);

lcd.write(e);

lcd.write(g);

lcd.write(h);

}

void convertk(unsigned int value)

{

unsigned int a,b,c,d,e,f,g,h;

a=value/10000;

b=value%10000;

c=b/1000;

d=b%1000;

e=d/100;

f=d%100;

g=f/10;

h=f%10;

a=a|0x30;

c=c|0x30;

e=e|0x30;

g=g|0x30;

h=h|0x30;

// lcd.write(a);

// lcd.write(c);

// lcd.write(e);

// lcd.write(g);

lcd.write(h);

}