**SOURCE CODE**

#include <Wire.h>

#include <LiquidCrystal.h>

const int rs = 13, en = 12, d4 = 11, d5 = 10, d6 = 9, d7 = 8;

LiquidCrystal lcd(rs, en, d4, d5, d6, d7);

float calibration\_value = 21.00;

int phval = 0;

unsigned long int avgval;

int buffer\_arr[10],temp;

int t = A1;

int s = A2;

int T,S=0;

int l;

void setup()

{

Serial.begin(9600);

lcd.begin(16, 2);

lcd.setCursor(0, 0);

lcd.print(" WELCOME ");

delay(2000);

lcd.clear();

lcd.setCursor(0, 0);

lcd.print(" WATER QUALITY ");

lcd.setCursor(0, 1);

lcd.print(" MONITORING ");

delay(2000);

lcd.clear();

lcd.print(" GSM ");

lcd.setCursor(0, 1);

lcd.print(" INITIALIZING ");

delay(2000);

Serial.print("AT\r\n");

delay(1000);

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

delay(1000);

Serial.print("AT+CSTT=\"airtelgprs.com\",\"\",\"\"\r\n");

delay(1000);

Serial.print("AT+CIICR\r\n");

delay(1000);

Serial.print("AT+CGATT=1\r\n");

delay(1000);

Serial.print("AT+CIFSR\r\n");

delay(1000);

Serial.print("AT+CGDCONT=1,\"IP\",\"internet\"\r\n");

delay(1000);

Serial.print("AT+CREG=2\r\n");

delay(1000);

Serial.print("AT+CIPHEAD=1\r\n");

delay(2000);

Serial.print("AT+SAPBR=3,1,\"contype\",\"GPRS\"\r\n");

delay(3000);

Serial.print("AT+SAPBR=3,1,\"APN\",\"internet\"\r\n");

delay(3000);

lcd.clear();

}

void loop()

{

l++;

T = analogRead(t);

S = analogRead(s);

T = analogRead(t);

lcd.setCursor(0, 1);

lcd.print("T=");

T = T-20;

delay(100);

lcd.print(T);

lcd.print(" C ");

S = analogRead(S);

lcd.setCursor(8, 1);

lcd.print("M=");

S= S-50;

S= S\*0.097;

delay(100);

lcd.print(S);

lcd.print(" % ");

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

{

buffer\_arr[i]=analogRead(A0);

delay(30);

}

for(int i=0;i<9;i++)

{

for(int j=i+1;j<10;j++)

{

if(buffer\_arr[i]>buffer\_arr[j])

{

temp=buffer\_arr[i];

buffer\_arr[i]=buffer\_arr[j];

buffer\_arr[j]=temp;

}

}

}

avgval=0;

for(int i=2;i<8;i++)

avgval+=buffer\_arr[i];

float volt=(float)avgval\*5.0/1024/6;

float ph\_act = -5.70 \* volt + calibration\_value;

lcd.setCursor(0, 0);

lcd.print("pH Val:");

lcd.setCursor(8, 0);

lcd.print(ph\_act);

delay(1000);

l++;

Serial.print(l);

if (l>60)

{

l=0;

lcd.clear();

lcd.setCursor(0, 0);

lcd.print(" SENDING ");

lcd.setCursor(0, 1);

lcd.print(" IOT >>>> ");

delay(100);

Serial.print("AT+SAPBR=1,1\r\n");

delay(1000);

Serial.print("AT+HTTPINIT\r\n");

delay(1000);

Serial.print("AT+HTTPPARA=\"URL\",\"http://api.thingspeak.com/update?api\_key=LAKOHD39K72577OD&field1=");

Serial.print(ph\_act);

Serial.print("&field2=");

Serial.print(T);

Serial.print("&field3=");

Serial.print(S);

Serial.print("\"\r\n");

delay(1000);

Serial.println("AT+HTTPPARA=\"CID\",1\r\n");

delay(1000);

Serial.println("AT+HTTPACTION=0\r\n");

delay(1000);

Serial.println("AT+HTTPREAD\r\n");

delay(1000);

Serial.println("AT+HTTPTERM\r\n");

delay(1000);

lcd.clear();

}

}