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();

}

}
```