## CODE

#include <SoftwareSerial.h>

// include the library code:

#include <LiquidCrystal.h>

// initialize the library with the numbers of the interface pins

LiquidCrystal lcd(13, 12, 6, 5, 4, 3); // LCD connections

/\*

D13 ==> RS

GND ==> R/W

D12 ==> Enable

D6 ==> DB4

D5 ==> DB5

D4 ==> DB6

D3 ==> DB7

\*/

float t=0;

char data = 0;

String apiKey = "XBQDVORXXGAROWDW"; // Write API key

// connect 8 to TX of ESP

// connect 9 to RX of ESP

SoftwareSerial ser(8,9); // RX, TX

void setup()

{

// enable debug serial

Serial.begin(9600); // serial data transmission at Baudrate of 9600

// enable software serial

ser.begin(9600);

lcd.begin(16, 2); // to intialize LCD

lcd.setCursor(0,0);

lcd.print(" Welcome");

lcd.setCursor(0,1);

lcd.print(" To ");

delay(3000);

lcd.clear();

lcd.setCursor(0,0);

lcd.print(" AIR");

lcd.setCursor(0,1);

lcd.print("QUALITY MONITOR");

delay(3000);

ser.println("AT"); // Attenuation

delay(1000);

ser.println("AT+GMR"); // To view version info for ESP-01 output: 00160901 and ESP-12 output: 0018000902-AI03

delay(1000);

ser.println("AT+CWMODE=3"); // To determine WiFi mode

/\*

1 = Station mode (client)

2 = AP mode (host)

3 = AP + Station mode (ESP8266 has a dual mode)

\*/

delay(1000);

ser.println("AT+RST"); // To restart the module

delay(5000);

ser.println("AT+CIPMUX=1"); // Enable multiple connections

/\*

0: Single connection

1: Multiple connections (MAX 4)

\*/

delay(1000);

String cmd="AT+CWJAP=\"SSID\",\"PASSWORD\""; // connect to Wi-Fi

ser.println(cmd);

delay(1000);

ser.println("AT+CIFSR"); // Return or get the local IP address

delay(1000);

lcd.clear();

lcd.setCursor(0,0);

lcd.print(" WIFI");

lcd.setCursor(0,1);

lcd.print(" CONNECTED");

}

void loop()

{

delay(1000);

t = analogRead(A0); // Read sensor value and stores in a variable t

Serial.print("Airquality = ");

Serial.println(t);

lcd.clear();

lcd.setCursor (0, 0);

lcd.print ("Air Qual: ");

lcd.print (t);

lcd.print (" PPM ");

lcd.setCursor (0,1);

if (t<=500)

{

lcd.print("Fresh Air");

Serial.print("Fresh Air ");

}

else if( t>=500 && t<=1000 )

{

lcd.print("Poor Air");

Serial.print("Poor Air");

}

else if (t>=1000 )

{

lcd.print("Very Poor");

Serial.print("Very Poor");

}

//lcd.scrollDisplayLeft();

delay(10000);

lcd.clear();

lcd.setCursor(0,0);

lcd.print(" SENDING DATA");

lcd.setCursor(0,1);

lcd.print(" TO CLOUD");

esp\_8266();

}

void esp\_8266()

{

// TCP connection AT+CIPSTART=4,"TCP","184.106.153.149",80

String cmd = "\nAT+CIPSTART=4,\"TCP\",\""; // Establish TCP connection

/\*

AT+CIPSTART=id,type,addr,port

id: 0-4, id of connection

type: String, “TCP” or “UDP”

addr: String, remote IP

port: String, remote port

\*/

cmd += "184.106.153.149"; // api.thingspeak.com

cmd += "\",80";

ser.println(cmd);

Serial.println(cmd);

if(ser.find("Error"))

{

Serial.println("AT+CIPSTART error");

return;

}

String getStr = "GET /update?api\_key="; // API key

getStr += apiKey;

//getStr +="&field1=";

//getStr +=String(h);

getStr +="&field1=";

getStr +=String(t);

getStr += "\r\n\r\n";

// send data length

cmd = "AT+CIPSEND="; // Send data AT+CIPSEND=id,length

cmd += String(getStr.length());

ser.println(cmd);

Serial.println(cmd);

delay(1000);

ser.print(getStr);

Serial.println(getStr);

// thingspeak needs 16 sec delay between updates

delay(17000);

}