```
#include <ESP8266WiFi.h>
#include <SPI.h>
#include <Wire.h>
#include <Adafruit_GFX.h>
#include <Adafruit_SSD1306.h>
#include <DHT.h>  // Including library for dht

#define SCREEN_WIDTH 128 // OLED display width, in pixels
#define SCREEN_HEIGHT 64 // OLED display height, in pixels
#define OLED_RESET -1 // Reset pin # (or -1 if sharing Arduino reset pin)

#define DHTPIN D4         //pin where the dht11 is connected
DHT dht(DHTPIN, DHT11);

String apiKey = "C25ICK6FHOR7PST4"; // Enter your Write API key from ThingSpeak
const char *ssid = "MySmartHome";     // replace with your wifi ssid and wpa2 key
const char *pass = "nRF52840";
const char* server = "api.thingspeak.com";

Adafruit_SSD1306 display(SCREEN_WIDTH, SCREEN_HEIGHT, &Wire, OLED_RESET);

const int AirValue = 790;   //you need to replace this value with Value_1
const int WaterValue = 390;  //you need to replace this value with Value_2
const int SensorPin = A0;
int soilMoistureValue = 0;
int soilmoisturepercent=0;
int relaypin = D5;

WiFiClient client;


void setup() {
 Serial.begin(115200); // open serial port, set the baud rate to 9600 bps
 display.begin(SSD1306_SWITCHCAPVCC, 0x3C); //initialize with the I2C addr 0x3C (128x64)
 display.clearDisplay();
 pinMode(relaypin, OUTPUT);

 dht.begin();

```

```
 WiFi.begin(ssid, pass);

 while (WiFi.status() != WL_CONNECTED)
 {
  delay(500);
  Serial.print(".");
 }
  Serial.println("");
  Serial.println("WiFi connected");
  delay(4000);
}


void loop()
{
 float h = dht.readHumidity();
 float t = dht.readTemperature();

 Serial.print("Humidity: ");
 Serial.println(h);
 Serial.print("Temperature: ");
 Serial.println(t);

 soilMoistureValue = analogRead(SensorPin);  //put Sensor insert into soil
 Serial.println(soilMoistureValue);

 soilmoisturepercent = map(soilMoistureValue, AirValue, WaterValue, 0, 100);


if(soilmoisturepercent > 100)
{
 Serial.println("100 %");

 display.setCursor(0,0);  //oled display
 display.setTextSize(2);
 display.setTextColor(WHITE);
 display.print("Soil RH:");
 display.setTextSize(1);
 display.print("100");
```

```
 display.println(" %");
 display.setCursor(0,20);  //oled display
 display.setTextSize(2);
 display.print("Air RH:");
 display.setTextSize(1);
 display.print(h);
 display.println(" %");
 display.setCursor(0,40);  //oled display
 display.setTextSize(2);
 display.print("Temp:");
 display.setTextSize(1);
 display.print(t);
 display.println(" C");
 display.display();

 delay(250);
 display.clearDisplay();
}


else if(soilmoisturepercent <0)
{
 Serial.println("0 %");

 display.setCursor(0,0);  //oled display
 display.setTextSize(2);
 display.setTextColor(WHITE);
 display.print("Soil RH:");
 display.setTextSize(1);
 display.print("0");
 display.println(" %");
 display.setCursor(0,20);  //oled display
 display.setTextSize(2);
 display.print("Air RH:");
 display.setTextSize(1);
 display.print(h);
 display.println(" %");
 display.setCursor(0,40);  //oled display
 display.setTextSize(2);
```

```
 display.print("Temp:");
 display.setTextSize(1);
 display.print(t);
 display.println(" C");
 display.display();

 delay(250);
 display.clearDisplay();
}


else if(soilmoisturepercent >=0 && soilmoisturepercent <= 100)
{
 Serial.print(soilmoisturepercent);
 Serial.println("%");

 display.setCursor(0,0);  //oled display
 display.setTextSize(2);
 display.setTextColor(WHITE);
 display.print("Soil RH:");
 display.setTextSize(1);
 display.print(soilmoisturepercent);
 display.println(" %");
 display.setCursor(0,20);  //oled display
 display.setTextSize(2);
 display.print("Air RH:");
 display.setTextSize(1);
 display.print(h);
 display.println(" %");
 display.setCursor(0,40);  //oled display
 display.setTextSize(2);
 display.print("Temp:");
 display.setTextSize(1);
 display.print(t);
 display.println(" C");
 display.display();

 delay(250);
 display.clearDisplay();
```

```
}

if(soilmoisturepercent >=0 && soilmoisturepercent <= 30)
{
  digitalWrite(relaypin, HIGH);
  Serial.println("Motor is ON");
}
else if (soilmoisturepercent >30 && soilmoisturepercent <= 100)
{
  digitalWrite(relaypin, LOW);
  Serial.println("Motor is OFF");
}

if (client.connect(server, 80)) // "184.106.153.149" or api.thingspeak.com
{
  String postStr = apiKey;
    postStr += "&field1=";
    postStr += String(soilmoisturepercent);
    postStr += "&field2=";
    postStr += String(h);
    postStr += "&field3=";
    postStr += String(t);
    postStr += "&field4=";
    postStr += String(relaypin);
    postStr += "\r\n\r\n\r\n\r\n";

  client.print("POST /update HTTP/1.1\n");
  client.print("Host: api.thingspeak.com\n");
  client.print("Connection: close\n");
  client.print("X-THINGSPEAKAPIKEY: " + apiKey + "\n");
  client.print("Content-Type: application/x-www-form-urlencoded\n");
  client.print("Content-Length: ");
  client.print(postStr.length());
  client.print("\n\n");
  client.print(postStr);

}
  client.stop();

```

```
196}
```