

```

1#include <ESP8266WiFi.h>
2#include <SPI.h>
3#include <Wire.h>
4#include <Adafruit_GFX.h>
5#include <Adafruit_SSD1306.h>
6#include <DHT.h> // Including library for dht
7
8#define SCREEN_WIDTH 128 // OLED display width, in pixels
9#define SCREEN_HEIGHT 64 // OLED display height, in pixels
10#define OLED_RESET -1 // Reset pin # (or -1 if sharing Arduino reset pin)
11
12#define DHTPIN D4 //pin where the dht11 is connected
13DHT dht(DHTPIN, DHT11);
14
15String apiKey = "C25ICK6FHOR7PST4"; // Enter your Write API key from ThingSpeak
16const char *ssid = "MySmartHome"; // replace with your wifi ssid and wpa2 key
17const char *pass = "nRF52840";
18const char *server = "api.thingspeak.com";
19
20Adafruit_SSD1306 display(SCREEN_WIDTH, SCREEN_HEIGHT, &Wire, OLED_RESET);
21
22const int AirValue = 790; //you need to replace this value with Value_1
23const int WaterValue = 390; //you need to replace this value with Value_2
24const int SensorPin = A0;
25int soilMoistureValue = 0;
26int soilmoisturepercent=0;
27int relaypin = D5;
28
29WiFiClient client;
30
31
32void setup() {
33  Serial.begin(115200); // open serial port, set the baud rate to 9600 bps
34  display.begin(SSD1306_SWITCHCAPVCC, 0x3C); //initialize with the I2C addr 0x3C (128x64)
35  display.clearDisplay();
36  pinMode(relaypin, OUTPUT);
37
38  dht.begin();
39

```

```
40 WiFi.begin(ssid, pass);
41
42 while (WiFi.status() != WL_CONNECTED)
43 {
44     delay(500);
45     Serial.print(".");
46 }
47 Serial.println("");
48 Serial.println("WiFi connected");
49 delay(4000);
50}
51
52
53void loop()
54{
55     float h = dht.readHumidity();
56     float t = dht.readTemperature();
57
58     Serial.print("Humidity: ");
59     Serial.println(h);
60     Serial.print("Temperature: ");
61     Serial.println(t);
62
63     soilMoistureValue = analogRead(SensorPin); //put Sensor insert into soil
64     Serial.println(soilMoistureValue);
65
66     soilmoisturepercent = map(soilMoistureValue, AirValue, WaterValue, 0, 100);
67
68
69 if(soilmoisturepercent > 100)
70 {
71     Serial.println("100 %");
72
73     display.setCursor(0,0); //oled display
74     display.setTextSize(2);
75     display.setTextColor(WHITE);
76     display.print("Soil RH:");
77     display.setTextSize(1);
78     display.print("100");
```

```
79 display.println(" %");
80 display.setCursor(0,20); //oled display
81 display.setTextSize(2);
82 display.print("Air RH:");
83 display.setTextSize(1);
84 display.print(h);
85 display.println(" %");
86 display.setCursor(0,40); //oled display
87 display.setTextSize(2);
88 display.print("Temp:");
89 display.setTextSize(1);
90 display.print(t);
91 display.println(" C");
92 display.display();
93
94 delay(250);
95 display.clearDisplay();
96}
97
98
99 else if(soilmoisturepercent <0)
100{
101 Serial.println("0 %");
102
103 display.setCursor(0,0); //oled display
104 display.setTextSize(2);
105 display.setTextColor(WHITE);
106 display.print("Soil RH:");
107 display.setTextSize(1);
108 display.print("0");
109 display.println(" %");
110 display.setCursor(0,20); //oled display
111 display.setTextSize(2);
112 display.print("Air RH:");
113 display.setTextSize(1);
114 display.print(h);
115 display.println(" %");
116 display.setCursor(0,40); //oled display
117 display.setTextSize(2);
```

```
118 display.print("Temp:");
119 display.setTextSize(1);
120 display.print(t);
121 display.println(" C");
122 display.display();
123
124 delay(250);
125 display.clearDisplay();
126}
127
128
129 else if(soilmoisturepercent >=0 && soilmoisturepercent <= 100)
130{
131 Serial.print(soilmoisturepercent);
132 Serial.println("%");
133
134 display.setCursor(0,0); //oled display
135 display.setTextSize(2);
136 display.setTextColor(WHITE);
137 display.print("Soil RH:");
138 display.setTextSize(1);
139 display.print(soilmoisturepercent);
140 display.println(" %");
141 display.setCursor(0,20); //oled display
142 display.setTextSize(2);
143 display.print("Air RH:");
144 display.setTextSize(1);
145 display.print(h);
146 display.println(" %");
147 display.setCursor(0,40); //oled display
148 display.setTextSize(2);
149 display.print("Temp:");
150 display.setTextSize(1);
151 display.print(t);
152 display.println(" C");
153 display.display();
154
155 delay(250);
156 display.clearDisplay();
```

```
157}
158
159 if(soilmoisturepercent >=0 && soilmoisturepercent <= 30)
160 {
161   digitalWrite(relaypin, HIGH);
162   Serial.println("Motor is ON");
163 }
164 else if (soilmoisturepercent >30 && soilmoisturepercent <= 100)
165 {
166   digitalWrite(relaypin, LOW);
167   Serial.println("Motor is OFF");
168 }
169
170 if (client.connect(server, 80)) // "184.106.153.149" or api.thingspeak.com
171 {
172   String postStr = apiKey;
173   postStr += "&field1=";
174   postStr += String(soilmoisturepercent);
175   postStr += "&field2=";
176   postStr += String(h);
177   postStr += "&field3=";
178   postStr += String(t);
179   postStr += "&field4=";
180   postStr += String(relaypin);
181   postStr += "\r\n\r\n\r\n\r\n";
182
183   client.print("POST /update HTTP/1.1\n");
184   client.print("Host: api.thingspeak.com\n");
185   client.print("Connection: close\n");
186   client.print("X-THINGSPEAKAPIKEY: " + apiKey + "\n");
187   client.print("Content-Type: application/x-www-form-urlencoded\n");
188   client.print("Content-Length: ");
189   client.print(postStr.length());
190   client.print("\n\n");
191   client.print(postStr);
192
193 }
194 client.stop();
195
```

