**#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();**

**}**

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