

CODING

Date	10 November 2022
TEAM ID PNT2022T	MID30395
Project name	IOT Based Smart Crop protection System for Agriculture

SMART CROP PROTECTION SYSTEM FOR AGRICULTURE

```
#include <ESP8266WiFi.h>
```

```
#include <WiFiClient.h>
```

```
#include <PubSubClient.h>
```

```
#include "DHT.h"
```

```
const char* ssid = "SMART-G";
```

```
const char* password = "10112019";
```

```
#define DHTPIN D6
```

```
#define G D0
```

```
#define DHTTYPE DHT11
```

```
DHT dht(DHTPIN, DHTTYPE);
```

```
#define ID "3t3j6q"
```

#define DEVICE_TYPE "ESP8266"

#define DEVICE_ID "TEST"

#define TOKEN "TEST-12345"

char server[] = ID ".messaging.internetofthings.ibmcloud.com";

char publish_Topic1[] = "iot-2/evt/Data1/fmt/json";

char publish_Topic2[] = "iot-2/evt/Data2/fmt/json";

char publish_Topic3[] = "iot-2/evt/Data2/fmt/json";

char publish_Topic4[] = "iot-2/evt/Data2/fmt/json";

char authMethod[] = "use-token-auth";

char token[] = TOKEN;

char clientId[] = "d:" ID ":" DEVICE_TYPE ":" DEVICE_ID;

WiFiClient wifiClient;

PubSubClient client(server, 1883, NULL, wifiClient);

void setup()

{ pinMode(D0,OUTPUT);

digitalWrite(D0,HIGH);

```
Serial.begin(115200);

dht.begin(); Serial.println();

WiFi.begin(ssid, password);

while (WiFi.status() != WL_CONNECTED)

    {delay(500);

        Serial.print(".");

    }

Serial.println("");

Serial.println(WiFi.localIP());

if (!client.connected())

    { Serial.print("Reconnecting client to ");

        Serial.println(server);

        while (!client.connect(clientId, authMethod, token))

            {Serial.print(".");

                delay(500);

            }

        Serial.println("Connected TO IBM IoT cloud!");
```

```
}  
}
```

```
long previous_message = 0;
```

```
void loop() {
```

```
  client.loop();
```

```
  long current = millis();
```

```
  if (current - previous_message > 3000)
```

```
    {previous_message = current;
```

```
    float hum = dht.readHumidity();
```

```
    float temp = dht.readTemperature();
```

```
    float MOI = map(analogRead(A0), 0, 1023, 100, 0);
```

```
    float bi = map(digitalRead(D1), 0, 1, 100, 0);
```

```
    if (isnan(hum) || isnan(temp) ){
```

```
      Serial.println(F("Failed to read from DHT sensor!"));return;
```

```
    }
```

```
    Serial.print("Temperature: ");
```

```
Serial.print(temp);  
  
Serial.print("°C");  
  
Serial.print(" Humidity: ");  
  
Serial.print(hum);  
  
Serial.print("%");  
  
Serial.print("SOIL MOITURE: ");  
  
Serial.print(MOI);  
  
Serial.print("ANIMAL AND BIRD: ");  
  
Serial.print(bi);  
  
if(MOI<=10)  
  
{  
  
    digitalWrite(D0,LOW);  
  
    delay(100);  
  
    digitalWrite(D0,HIGH);  
  
}  
  
else  
  
{  
  
    digitalWrite(D0,HIGH);  
  
}
```

```
String payload = "{\"d\":{\"Name\":\"" DEVICE_ID "\"";
```

```
    payload += "\",\"Temperature\":";
```

```
    payload += temp;
```

```
    payload += "}}";
```

```
Serial.print("Sending payload: ");
```

```
Serial.println(payload);
```

```
if (client.publish(publish_Topic1, (char*) payload.c_str()))
```

```
    {Serial.println("Published successfully");
```

```
} else {
```

```
    Serial.println("Failed");
```

```
}
```

```
String payload1 = "{\"d\":{\"Name\":\"" DEVICE_ID "\"";
```

```
    payload1 += "\",\"Humidity\":";
```

```
    payload1 += hum;
```

```
    payload1 += "}}";
```

```
Serial.print("Sending payload: ");
```

```
Serial.println(payload1);
```

```
Serial.println('\n');
```

```
if (client.publish(publish_Topic2, (char*) payload1.c_str()))
```

```
{Serial.println("Published successfully");
```

```
} else {
```

```
Serial.println("Failed");
```

```
}
```

```
String payload3 = "{\"d\":{\"Name\":\"\" DEVICE_ID \"\"\";
```

```
payload3 += "\",\"Moiture\":\"\";
```

```
payload3 += MOI;
```

```
payload3 += "\"}\";
```

```
Serial.print("Sending payload: ");
```

```
Serial.println(payload3);
```

```
if (client.publish(publish_Topic3, (char*) payload3.c_str()))  
    {Serial.println("Published successfully");  
    } else {  
        Serial.println("Failed");  
    }
```

```
String payload4 = "{\"d\":{\"Name\":\"\" DEVICE_ID \"\"";  
    payload4 += ",\"Animal&Bird\":\"";  
    payload4 += bi;  
    payload4 += "\"}\"";
```

```
Serial.print("Sending payload: ");
```

```
Serial.println(payload4);
```

```
if (client.publish(publish_Topic4, (char*) payload4.c_str()))  
    {Serial.println("Published successfully");  
    } else {
```



```
Serial.println("Failed");
```

```
}
```

```
}
```

```
}
```