

ASSIGNMENT-4

Date	26 October 2022
Team ID	PNT2022TMID32634
Project Name	Industry-Specific Intelligent Fire Management System
Name	Dhivakar B

CODE:

```
#include <WiFi.h> //library for wifi
#include <PubSubClient.h> //library for MQTT
#include "DHT.h" // Library for dht11
#define DHTPIN 15 // what pin we're connected to
#define DHTTYPE DHT22 // define type of sensor DHT 11
#define LED 2

DHT dht (DHTPIN, DHTTYPE); // creating the instance by passing pin and type of dht
connected

void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);

//-----credentials of IBM Accounts-----

#define ORG "0lchi7" //IBM ORGANITION ID
#define DEVICE_TYPE "DHT22_Sensor" //Device type mentioned in ibm watson IOT
Platform
#define DEVICE_ID "14022002" //Device ID mentioned in ibm watson IOT Platform
```

```

#define TOKEN "z)aPZNK2tyveCR68li"      //Token

String data3;

float h, t;


//----- Customise the above values -----

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";// Server Name

char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event
perform and format in which data to be send

char subscribetopic[] = "iot-2/cmd/command/fmt/String";// cmd REPRESENT command
type AND COMMAND IS TEST OF FORMAT STRING

char authMethod[] = "use-token-auth";// authentication method

char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id


//-----

WiFiClient wifiClient; // creating the instance for wificlient

PubSubClient client(server, 1883, callback ,wifiClient); //calling the predefined
client id by passing parameter like server id,portand wificredential


void setup()// configureing the ESP32
{
    Serial.begin(115200);
    dht.begin();
    pinMode(LED,OUTPUT);
    delay(10);
    Serial.println();

```

```
wificonnect();  
mqttconnect();  
}
```

```
void loop()// Recursive Function
```

```
{  
  
    h = dht.readHumidity();  
    t = dht.readTemperature();  
    Serial.print("temp:");  
    Serial.println(t);  
    Serial.print("Humid:");  
    Serial.println(h);  
  
    PublishData(t, h);  
    delay(1000);  
    if (!client.loop()) {  
        mqttconnect();  
    }  
}
```

```
void PublishData(float temp, float humid) {  
    mqttconnect();//function call for connecting to ibm  
    /*  
        creating the String in in form JSon to update the data to ibm cloud  
    */
```

```
String payload = "{\"Temperature\":\"";  
payload += temp;  
payload += "," \"Humidity\":\"";  
payload += humid;  
payload += "}";
```

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

```
if (client.publish(publishTopic, (char*) payload.c_str())) {  
    Serial.println("Publish ok");// if it sucessfully upload data on the cloud  
    then it will print publish ok in Serial monitor or else it will print publish  
    failed  
} else {  
    Serial.println("Publish failed");  
}  
  
}
```

```
void mqttconnect() {  
    if (!client.connected()) {  
        Serial.print("Reconnecting client to ");  
        Serial.println(server);  
        while (!!!client.connect(clientId, authMethod, token)) {  
            Serial.print(".");  
        }
```

```

        delay(500);
    }

    initManagedDevice();

    Serial.println();
}

}

void wificonnect() //function defination for wificonnect
{
    Serial.println();
    Serial.print("Connecting to ");

    WiFi.begin("Wokwi-GUEST", "", 6); //passing the wifi credentials to establish
the connection
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }

    Serial.println("");
    Serial.println("WiFi connected");
    Serial.println("IP address: ");
    Serial.println(WiFi.localIP());
}

void initManagedDevice() {
    if (client.subscribe(subscribetopic)) {
        Serial.println((subscribetopic));
        Serial.println("subscribe to cmd OK");
    }
}

```

```

    } else {
        Serial.println("subscribe to cmd FAILED");
    }
}

void callback(char* subscribetopic, byte* payload, unsigned int payloadLength)
{
    Serial.print("callback invoked for topic: ");
    Serial.println(subscribetopic);
    for (int i = 0; i < payloadLength; i++) {
        //Serial.print((char)payload[i]);
        data3 += (char)payload[i];
    }
    Serial.println("data: "+ data3);
    if(data3=="lighton")
    {
        Serial.println(data3);
        digitalWrite(LED,HIGH);
    }
    else
    {
        Serial.println(data3);
        digitalWrite(LED,LOW);
    }
    data3="";
}

```

CIRCUIT:

WOKWI

SAVE

SHARE

My IBM Project

Docs

sketch.ino

diagram.json

libraries.txt

Library Manager

```
1 #include <WiFi.h> //library for wifi
2 #include <PubSubClient.h> //library for MQTT
3 #include "DHT.h" // Library for dht11
4 #define DHTPIN 15 // what pin we're connected to
5 #define DHTTYPE DHT22 // define type of sensor DHT 11
6 #define LED 2
7
8 DHT dht (DHTPIN, DHTTYPE); // creating the instance by passing pin and type of dht connect
9
10 void callback(char* subscribetopic, byte* payload, unsigned int payloadlength);
11
12 //-----credentials of IBM Accounts-----
13
14 #define ORG "0lchi7" // IBM ORGANIZATION ID
15 #define DEVICE_TYPE "DHT22_Sensor" // Device type mentioned in IBM Watson IoT Platform
16 #define DEVICE_ID "14022002" // Device ID mentioned in IBM Watson IoT Platform
17 #define TOKEN "2)ap2MK2tyveCR681l" // Token
18 String data3;
19 float h, t;
20
21 //----- Customise the above values -----
22
23 char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; // Server Name
24 char publishTopic[] = "iot-2/evt/Data/fmt/json"; // topic name and type of event perform a
25 char subscribetopic[] = "iot-2/cmd/command/fmt/String"; // cmd REPRESENT command type AND
26 char authMethod[] = "use-token-auth"; // authentication method
27 char token[] = TOKEN;
28 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; // client id
29
30 //-----
31
32 WiFiClient wificlient; // creating the instance for wificlient
33 PubSubClient client(server, 1883, callback, wificlient); // calling the predefined client
34
35
36 void setup() { // configuring the ESP32
```

Simulation

00:44.600

98%

Humid:40.00

Sending payload: {"temp":24.00,"Humid":40.00}

Publish ok

temp:24.00

Humid:40.00

Sending payload: {"temp":24.00,"Humid":40.00}

Publish ok

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	
▼	<input type="checkbox"/> 14022002	Connected	DHT22_Sensor	Device	19 Nov 2022 10:29 AM		→ ...
Identity Device Information Recent Events State Logs							
The recent events listed show the live stream of data that is coming and going from this device.							
Event	Value	Format	Last Received				
Data	{"temp":24,"Humid":40}	json	a few seconds ago				
Data	{"temp":24,"Humid":40}	json	a few seconds ago				
Data	{"temp":24,"Humid":40}	json	a few seconds ago				
Data	{"temp":24,"Humid":40}	json	a few seconds ago				
Data	{"temp":24,"Humid":40}	json	a few seconds ago				