

DEVELOP A PYTHON SCRIPT

To write a python code to get the temperature and humidity.

```
#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 22
#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 "97mai0"//IBM ORGANITION ID
#define DEVICE_TYPE "Sivamadhavan23"//Device type mentioned in ibm watson
IOT Platform
#define DEVICE_ID "Sivamadhavanece"//Device ID mentioned in ibm watson IOT
Platform
#define TOKEN "I)&NoyRn-DUOO(*4yn"      //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();
    delay(10);
    Serial.println();
    wificonnect();
    mqttconnect();
}

void loop()// Recursive Function
{

    h = dht.readHumidity();
    t = dht.readTemperature();
    Serial.print("Temperature:");
    Serial.println(t);
    Serial.print("Humidity:");
    Serial.println(h);

    PublishData(t, h);
    delay(1000);
    if (!client.loop()) {
        mqttconnect();
    }
}

```

```

/*.....retrieving to
Cloud.....*/

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="";  
  
}
```