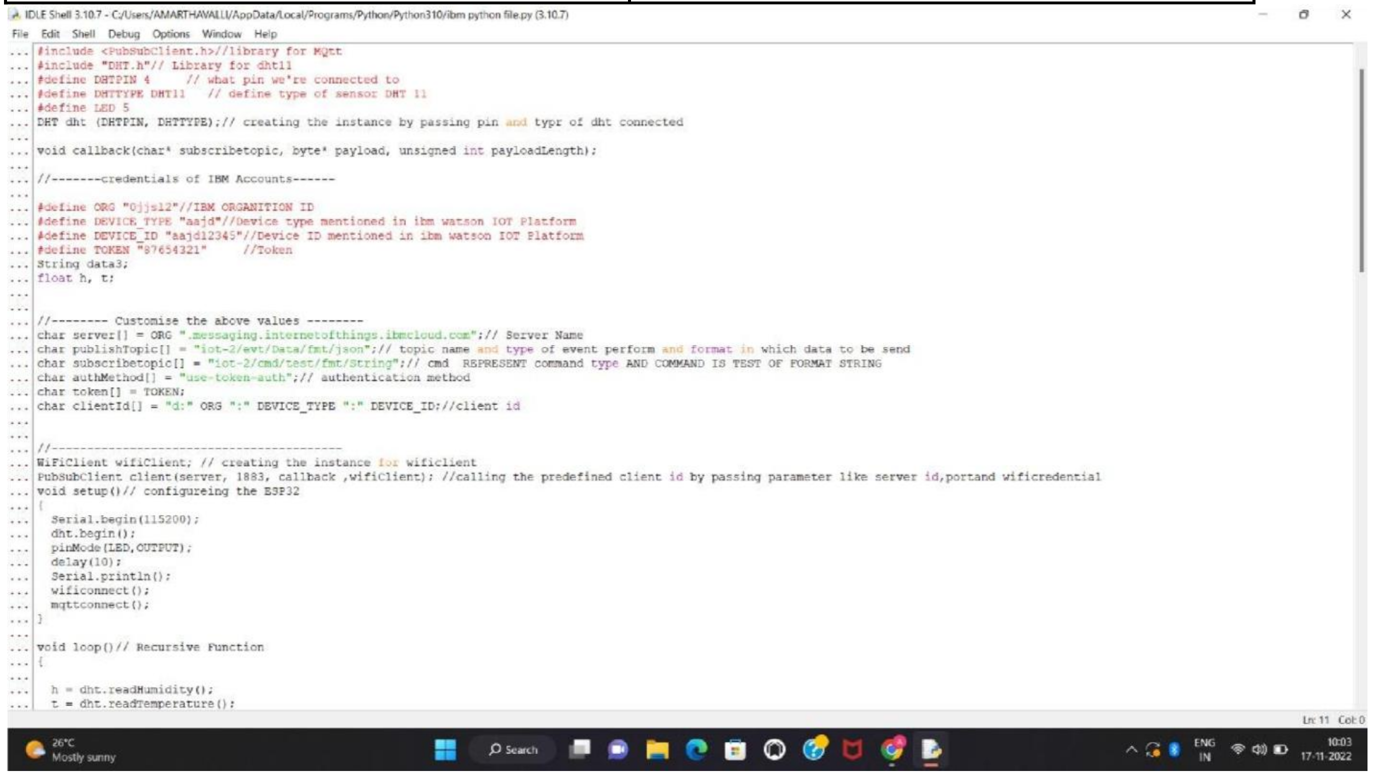
Develop the python Script

Publish Data to the IBM Cloud

Date	17th November 2022
Team Id	PNT2022TMID21831


IDLE Shell 3.10.7 - C:/Users/AMARTHAVALLI/AppData/Local/Programs/Python/Python310/ibm python file.py (3.10.7)
File Edit Shell Debug Options Window Help
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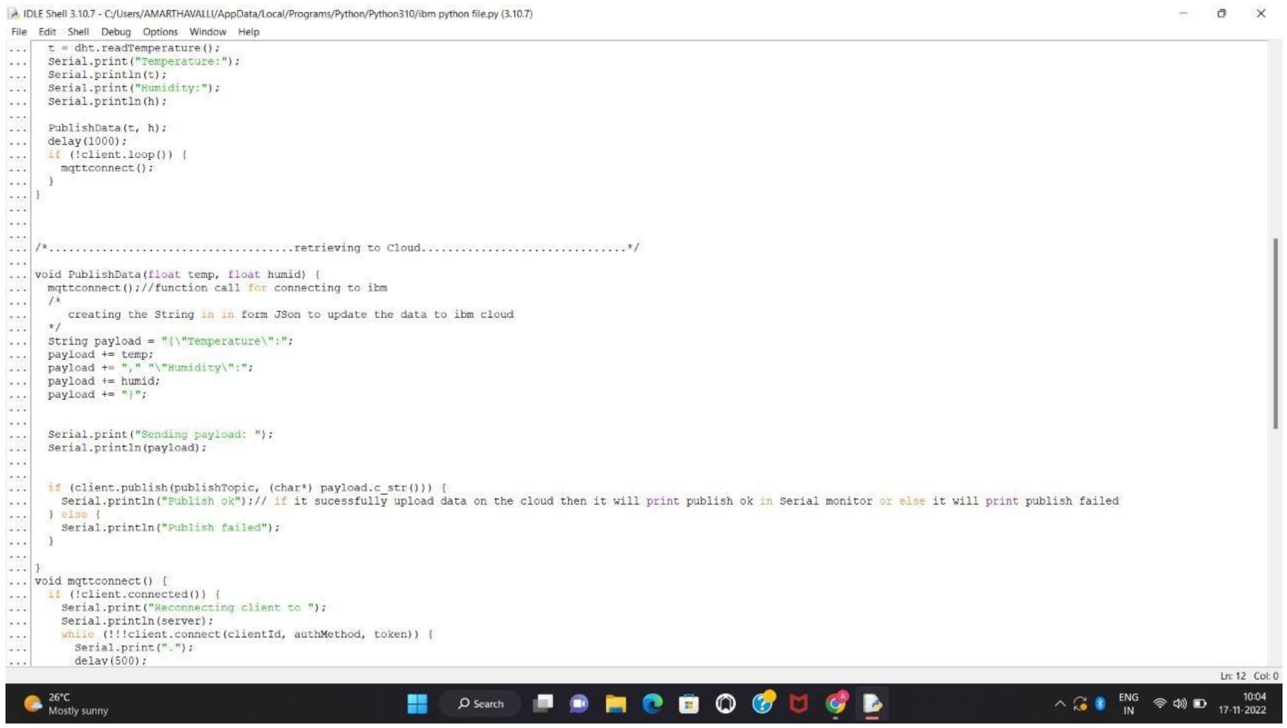
```
... #include <PubSubClient.h>//library for MQtt
... #include "DHT.h"// Library for dht11
... #define DHTPIN 4     // what pin we're connected to
... #define DHTTYPE DHT11   // define type of sensor DHT 11
... #define LED 5
... DHT dht (DHTPIN, DHTTYPE);// creating the instance by passing pin and typr of dht connected
...
... void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);
...
... //-------credentials of IBM Accounts------
...
... #define ORG "0jjs12"//IBM ORGANITION ID
... #define DEVICE_TYPE "aajd"//Device type mentioned in ibm watson IOT Platform
... #define DEVICE_ID "aajd12345"//Device ID mentioned in ibm watson IOT Platform
... #define TOKEN "87654321"     //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/test/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();
```


IDLE Shell 3.10.7 - C:/Users/AMARTHAVALLI/AppData/Local/Programs/Python/Python310/ibm python file.py (3.10.7)
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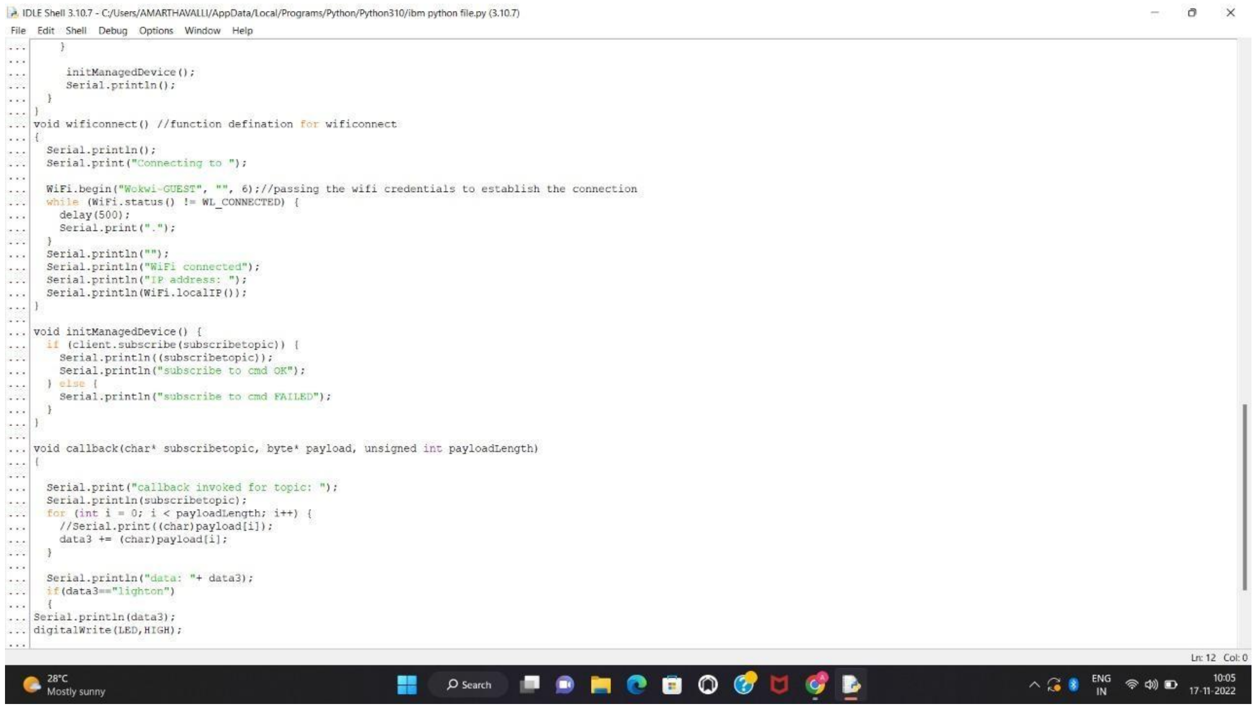
17-11-2022

```
  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);
```


IDLE Shell 3.10.7 - C:/Users/AMARTHAVALLI/AppData/Local/Programs/Python/Python310/ibm python file.py (3.10.7)
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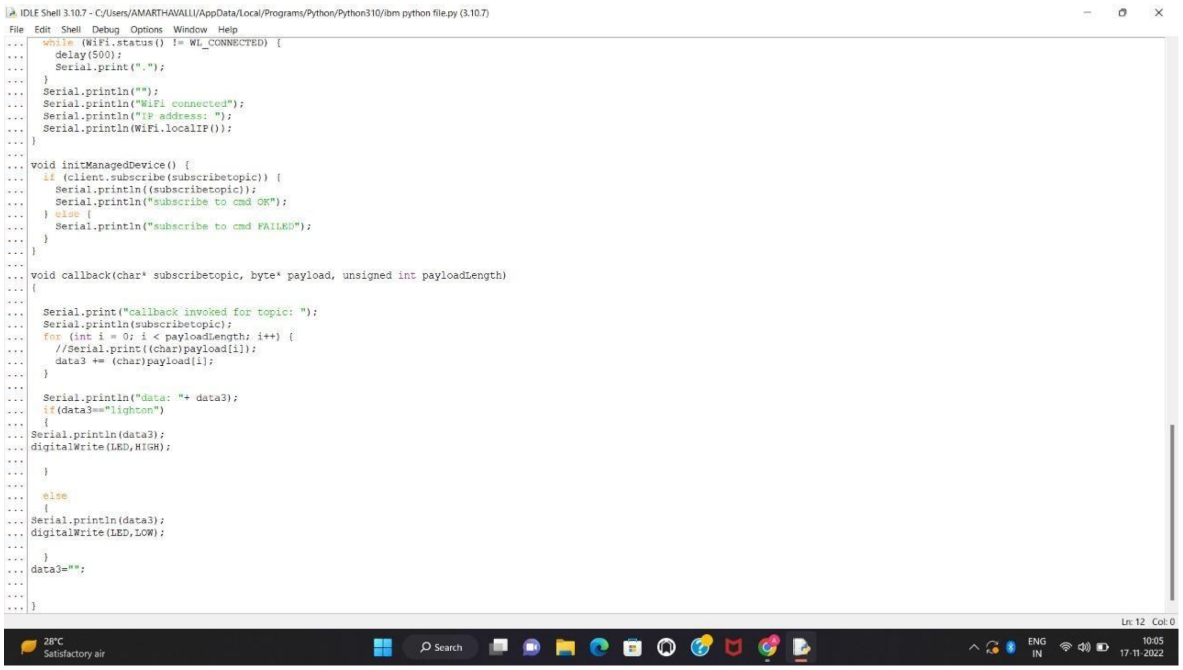
```
    }

     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);
```



IDLE Shell 3.10.7 - C:/Users/AMARTHAVALLI/AppData/Local/Programs/Python/Python310/ibm python file.py (3.10.7)

```
...   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="";
...
...
... }
```

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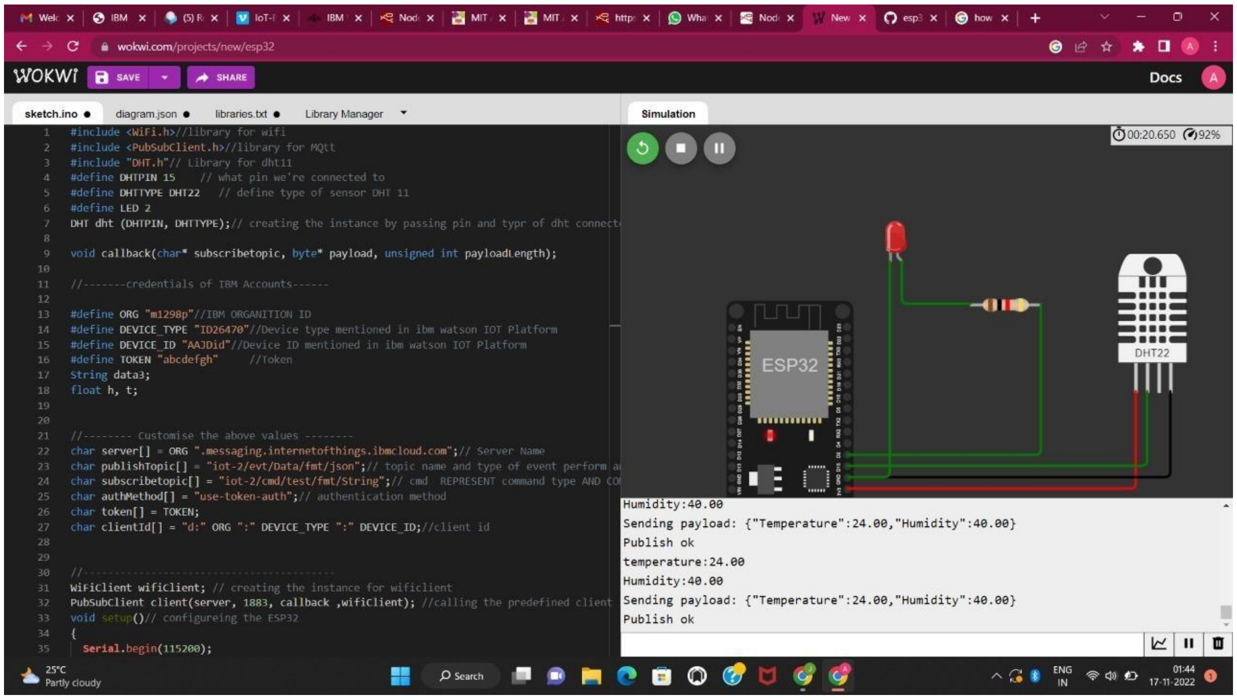

wokwi.com/projects/new/esp32

```
#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 typr of dht connect

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

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

#define ORG "m1298p"//IBM ORGANITION ID
#define DEVICE_TYPE "ID26470"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "AAJDid"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "abcdefgh"     //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 a
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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
void setup()// configureing the ESP32
{
  Serial.begin(115200);
```

```
Humidity:40.00
Sending payload: {"Temperature":24.00,"Humidity":40.00}
Publish ok
temperature:24.00
Humidity:40.00
Sending payload: {"Temperature":24.00,"Humidity":40.00}
Publish ok
```