

## SPRINT 4 - ARDUINO CODE

TEAM ID	PNT2022TMID49973
	Smart Farmer – IoT Enabled Smart Farming Application
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Arduino Code.1.py - C:/Users/SHARON/AppData/Local/Programs/Python/Python37/Arduino Code.1.py (3.7.0)

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```
#include <WiFi.h>
#include <PubSubClient.h>
#include "DHT.h"
#define DHTPIN 4
#define DHTTYPE DHT22
#define DCMOTOR 5
DHT dht (DHTPIN, DHTTYPE);

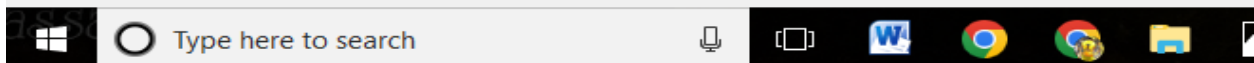
void callback(char* subscribtopic, byte* payload, unsigned int payloadLength);

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

#define ORG "av8jey"
#define DEVICE_TYPE "PNT2022TMID49973"
#define DEVICE_ID "Holy_Cross_College"
#define TOKEN "abcdefghij"
String data3;
float h, t, m;

//----- Customise the above values -----
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json";
char subscribtopic[] = "iot-2/cmd/test/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;//client id

//-----
WiFiClient wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient);
void setup()
{
    Serial.begin(115200);
    dht.begin();
    pinMode(DCMOTOR,OUTPUT);
    delay(10);
    Serial.println();
    wificonnect();
    mqttconnect();
}
```



```

    wificonnect();
    mqttconnect();
}

void loop()
{
    h = dht.readHumidity();
    t = dht.readTemperature();
    m = dht.readSoilmoisture();
    Serial.print("temperature:");
    Serial.println(t);
    Serial.print("Humidity:");
    Serial.println(h);
    Serial.print("Soil moisture:");
    Serial.println(m);

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

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

void PublishData(float temp, float humid, float moist) {
    mqttconnect();
    /*
    creating the String in in form JSON to update the data to ibm cloud
    */
    String payload = "{"temperature\":";
    payload += temp;
    payload += "," "humidity\":";
    payload += humid;
    payload += "," "soilmoisture\":";
    payload += moist;
    Serial.print("Sending payload: ");

```



```

payload += "," + "\"" + "soilmoisture\"";
payload += moist;

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

if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish ok");
} 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()
{
    Serial.println();
    Serial.print("Connecting to ");

    WiFi.begin("Wokwi-GUEST", "", 6);
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }
    Serial.println("");
    Serial.println("WiFi connected");
    Serial.println("IP address: ");
    Serial.println(WiFi.localIP());
}

```

```
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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=="motoron"
  {
    Serial.println(data3);
    digitalWrite(MOTOR,HIGH);

  }

  else
  {
    Serial.println(data3);
    digitalWrite(MOTOR,LOW);

  }
  data3="";
}

}

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## CIRCUIT DIAGRAM

