

SPRINT 1

Date	11 th November - 2022
Team ID	PNT2022TMID42737
Project Name	Project – Smart Farmer-IoT Enabled smart Farming Application

Connecting Sensors with Arduino using C++ 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 typr of dht connected

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

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

#define ORG "bjj5tn"//IBM ORGANITION ID

#define DEVICE_TYPE "FIRE"//Device type mentioned in ibm watson IOT Platform

#define DEVICE_ID "WATER"//Device ID mentioned in ibm watson IOT Platform

#define TOKEN "16431653"    //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();

}

}

/*.....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 = "{\"temp\":";

    payload += temp;

    payload += ", \"Humid\":";

    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 definition 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="";

}

```

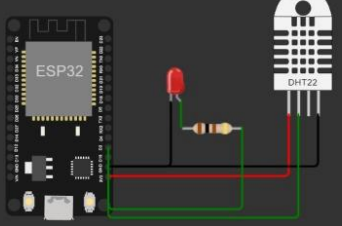
Circuit Diagram

WOKWI SAVE SHARE sketch.ino Docs

sketch.ino diagram.json libraries.txt Library Manager

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8 DHT dht (DHTPIN, DHTTYPE); // creating the instance by passing pin and type of dht connecte
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10 void callback(char* subscribetopic, byte* payload, unsigned int payloadlength);
11
12 //-----credentials of IBM Accounts-----
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14 #define ORG "bjj5tn" // IBM ORGANITION ID
15 #define DEVICE_TYPE "FIRE" // Device type mentioned in ibm watson IOT Platform
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18 String datab;
19 float h, t;
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21 //----- Customise the above values -----
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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 an
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 wifi client
```

Simulation



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
Reconnecting client to bjj5tn.messaging.internetofthings.ibmcloud.com

flows (4).json flows (3).json flows (1).json Show all

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