**Project Development Phase**

**SPRINT 2**

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| --- | --- |
| **Date** | **5th November 2022** |
| **Team ID** | **PNT2022TMID28767** |
| **Project Name** | **IoT Enabled Smart Farming Application** |
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**Simulation:**

Sending temperature and humidity values from Wokwi to IBM Watson.

**Program:**

#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 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 "93oivx"//IBM ORGANITION ID

#define DEVICE\_TYPE "NodeMCU"//Device type mentioned in ibm watson IOT Platform

#define DEVICE\_ID "12345"//Device ID mentioned in ibm watson IOT Platform

#define TOKEN "12345678" //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("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="";

}

**OUTPUT:**

