SPRINT 3

Date	12 November 2022
Team ID	PNT2022TMID12911
Project Name	Smart Farmer – IoT Enabled Farming Application
Maximum Marks	8 Marks

SENDING SENSOR DATA FROM WOKWI TO IBM WATSON IOT PLATFORM:

PROGRAM FOR SENDING TEMPERATURE AND HUMIDITY VALUES USING MQTT PROTOCOL:

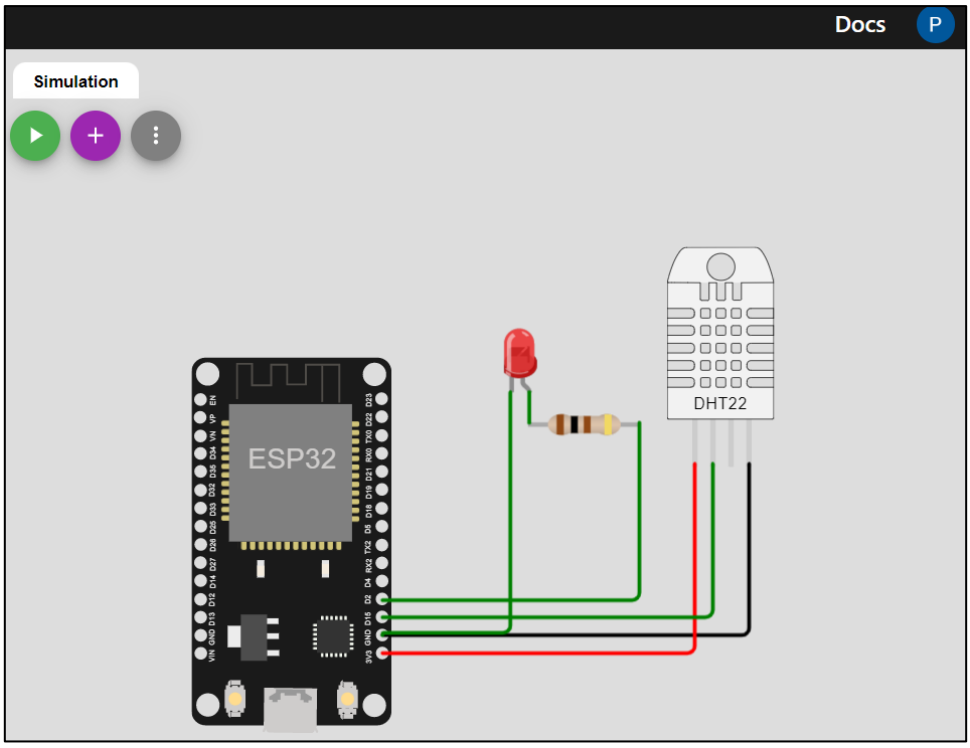
```
#include <WiFi.h>
#include <PubSubClient.h>
#include "DHT.h"
#define DHTPIN 15
#define DHTTYPE DHT22
#define LED 2

DHT dht (DHTPIN, DHTTYPE);
void callback(char* subscribetopic, byte* payload, unsigned int payloadLength);
#define ORG "tu4jce"//IBM ORGANITION ID
#define DEVICE_TYPE "NodeMCU"//Device type
#define DEVICE_ID "12345"//Device ID
#define TOKEN "2W?*d5U83t+ICiNhyJ"    //Token
String data3;
float h, t;
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/fmt/json";
char subscribetopic[] = "iot-2/cmd/command/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
//-----------------------------------------
WiFiClient wifiClient;
PubSubClient client(server, 1883, callback ,wifiClient);
void setup()
{
 Serial.begin(115200);
 dht.begin();
 pinMode(LED,OUTPUT);
 delay(10);
 Serial.println();
 wificonnect();
 mqttconnect();
}


void loop()
```

```
{

 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();
 }
}
void PublishData(float temp, float humid) {
 mqttconnect();
 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");
 } 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());
}

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="";
}
```

Wokwi project link: https://wokwi.com/projects/348379419871543890

CIRCUIT:



WOKWI SERIAL MONITOR:

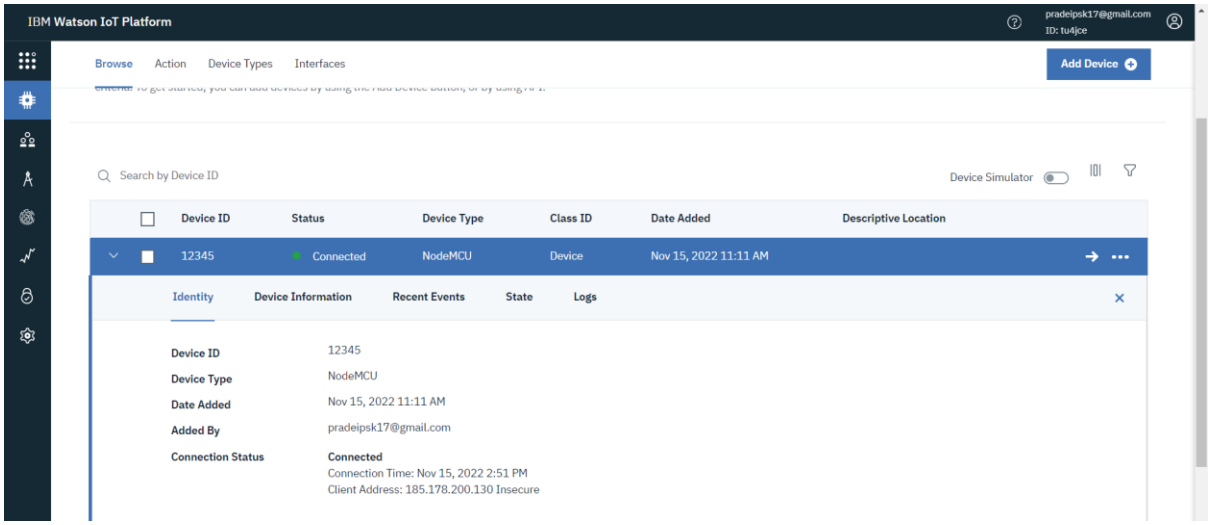
```
Connecting to ...
WiFi connected
IP address:
10.10.0.2
Reconnecting client to tu4jce.messaging.internetofthings.ibmcloud.com
iot-2/cmd/command/fmt/String
subscribe to cmd OK
```

Connecting to IBM Watson IoT platform

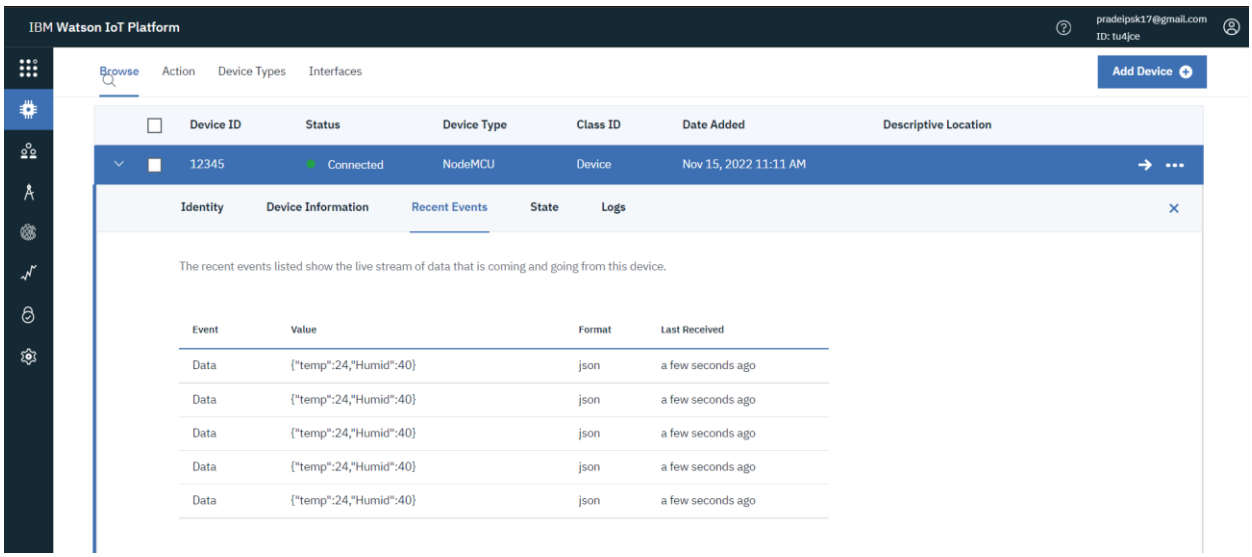
```
temp:24.00
Humid:40.00
Sending payload: {"temp":24.00,"Humid":40.00}
Publish ok
temp:24.00
Humid:40.00
Sending payload: {"temp":24.00,"Humid":40.00}
Publish ok
```

Publishing temperature and humidity values to the IBM Watson IoT platform

IBM Watson IoT platform:



Connected Status in IBM Watson IoT platform



Recent Events in IBM Watson IoT platform

Once the sensor data like temperature and humidity gets updated in the IBM Watson IoT platform, those sensor data's will be available under recent events.