PROJECT DEVELOPMENT PHASE

SPRINT – 4

LINKING THE APP AND SIMULATION TO THE IBM CLOUD USING NODE-RED APP.

Details:

- With addition code for connection to the cloud. The initial code for the simulation varies.
- Using the IOT Watson platform we can add a device and use the simulation and link it the node-red app.
- Using appropriate connection in the app such as payload and other blocks we obtain a link to the app and the simulation
- With the help of this connection we obtain an alert in the application.

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 "i3869j"//IBM ORGANITION ID
#define DEVICE_TYPE "abcd"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "1234"//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

int ledPin = 13;
int inputPin = 2;
int pirState = LOW;
int val = 0;

void setup() {
  dht.begin();
  pinMode(ledPin, OUTPUT);
  pinMode(inputPin, INPUT);
  Serial.begin(9600);
  wificonnect();
  mqttconnect();
}

void loop() {
  val = digitalRead(inputPin);
  if (val == HIGH) {
    digitalWrite(ledPin, HIGH);
    if (pirState == LOW) {
      Serial.println("Motion detected!");
     pirState = HIGH;
    }
  } else {
    digitalWrite(ledPin, LOW);
    if (pirState == HIGH) {
     Serial.println("Motion ended!");

      pirState = LOW;
    }
```

```
  }
}

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

void PublishData(char) {
  mqttconnect();//function call for connecting to ibm
  /*
     creating the String in in form JSon to update the data to ibm cloud
  */
  String payload = "motion detected";
  payload += temp;
  payload += "motion ended";
  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="";
}
```

Node-red connections: