

# ASSIGNMENT-4

BY NAVEENKUMAR S

WOKWI LINK: [WOKWI](#)

CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "usx5i2"
#define DEVICE_TYPE "naveen"
#define DEVICE_ID "123"
#define TOKEN "123456789"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/naveen/fmt/json";
char topic[] = "iot-2/cmd/home/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);
void publishData();

const int trigpin=5;
const int echopin=18;
String command;
String data="";

long duration;
float dist;

void setup()
{
  Serial.begin(115200);
  pinMode(led, OUTPUT);
  pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
  wifiConnect();
  mqttConnect();
}
```

```

}

void loop() {
    bool isNearby = dist < 100;
    digitalWrite(led, isNearby);

    publishData();
    delay(500);

    if (!client.loop()) {
        mqttConnect();
    }
}

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

void mqttConnect() {
    if (!client.connected()) {
        Serial.print("Reconnecting MQTT client to "); Serial.println(server);
        while (!client.connect(clientId, authMethod, token)) {
            Serial.print(".");
            delay(500);
        }
        initManagedDevice();
        Serial.println();
    }
}

void initManagedDevice() {
    if (client.subscribe(topic)) {
        // Serial.println(client.subscribe(topic));
        Serial.println("IBM subscribe to cmd OK");
    } else {
        Serial.println("subscribe to cmd FAILED");
    }
}

void publishData()
{
    digitalWrite(trigpin, LOW);
}

```

```

digitalWrite(trigpin,HIGH);
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2;
if(dist<100){
    String payload = "{\"Alert Distance\":\"";
    payload += dist;
    payload += "\"}";

    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if(client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Warning crosses 110cm -- it automatically of the loop");
        digitalWrite(led,HIGH);
    }
}

if(dist>101 && dist<111){
    String payload = "{\"Normal Distance\":\"";
    payload += dist;
    payload += "\"}";

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

}

}

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++){
        dist += (char)payload[i];
    }
    Serial.println("data:" + data3);
    if(data3=="lighton"){
        Serial.println(data3);
        digitalWrite(led,HIGH);
    }
    data3="";
}
}

```

# WOKWI OUTPUT:

The screenshot displays the Wokwi IDE interface. On the left, the code for `Distance_Sensor.ino` is shown, which includes headers for `WiFi` and `PubSubClient`, defines various constants like `ORG`, `DEVICE_TYPE`, `DEVICE_ID`, `TOKEN`, `speed`, and `led`, and implements a `publishData()` function. On the right, the simulation window shows a visual representation of the hardware: an ESP32 microcontroller board connected to an HC-05 Bluetooth module. Below the simulation, a log window shows the following output:

```
Connecting to Wifi..Wifi connected, IP address: 10.10.0.2
Reconnecting MQTT client to usx5i2.messaging.internetofthings.ibmcloud.com
```

# IBM CLOUD:

The screenshot shows the IBM Watson IoT Platform dashboard. The top navigation bar includes 'Browse', 'Action', 'Device Types', and 'Interfaces'. A table displays the following data:

Event	Value	Format	Last Received
naveen	{"Alert Distance":61.97}	json	a few seconds ago
naveen	{"Alert Distance":61.97}	json	a few seconds ago
naveen	{"Alert Distance":61.97}	json	a few seconds ago
naveen	{"Alert Distance":61.97}	json	a few seconds ago
naveen	{"Alert Distance":40.97}	json	a few seconds ago

At the bottom, there is a pagination control showing 'Items per page 50' and '1 of 1 page'.