

## Assignment -4

**BATCH NO : B9-3A5E**

Assignment Date	19 October 2022
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Student Roll Number	962219205026
Maximum Marks	2 Marks

WokWi Link : <https://wokwi.com/projects/347843333031199315>

Program :

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>

WiFiClient wifiClient;

#define ORG "7h1uma"
#define DEVICE_TYPE "eps32"
#define DEVICE_ID "12345"
#define TOKEN "123456789"
#define speed 0.034

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Data/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;
int dist;

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

```

    mqttConnect();
}

void loop() {

    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(1000);
        }
        initManagedDevice();
        Serial.println();
    }
}

void initManagedDevice() {
    if (client.subscribe(topic)) {
        Serial.println(client.subscribe(topic));
        Serial.println("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){
    DynamicJsonDocument doc(1024);
    String payload;
    doc["AlertDistance:"]=dist;
    serializeJson(doc, payload);
    delay(3000);
    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if (client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Publish OK");
    } else {
        Serial.println("Publish FAILED");
    }
}
}
}

```

Output :

The screenshot displays the Wokwi IDE interface. On the left, the 'sketch.ino' file is open, showing a C++ program that uses an ultrasonic sensor (HC-SR04) to measure distance and publishes the data to an IBM Watson IoT Platform via MQTT. The code includes constants for pins, server details, and a loop that publishes distance data every 3 seconds.

On the right, the 'Simulation' window shows a 3D model of the ESP32 board and the ultrasonic sensor. Below the model, the serial output log displays the following messages:

```

Sending payload: {"AlertDistance":51}
Publish OK

Sending payload: {"AlertDistance":51}
Publish OK

Sending payload: {"AlertDistance":51}
Publish OK

Sending payload: {"AlertDistance":52}
Publish OK

```

The bottom of the screen shows the Windows taskbar with the time 3:24 PM on 11/9/2022.

St. Xavier's Catholic College of En...Search results - liijshdon@gmail...New ESP32 Project - Wokwi Simu...IBM Watson IoT Platform

7h1uma.internetofthings.ibmcloud.com/dashboard/devices/drilldown/eps32:12345?returnTo=/devices/browse

liijsh.501926@svccce.edu.inID: 7h1uma

IBM Watson IoT Platform

← Back

Device Drilldown - 12345

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Recent Events

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Data	{"AlertDistance":"52"}	json	a few seconds ago
Data	{"AlertDistance":"52"}	json	a few seconds ago
Data	{"AlertDistance":"51"}	json	a few seconds ago
Data	{"AlertDistance":"51"}	json	a few seconds ago
Data	{"AlertDistance":"51"}	json	a few seconds ago

Activate Windows  
Go to Settings to activate Windows.

Windows Taskbar

3:24 PM  
11/9/2022