

ASSIGNMENT 4

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Write a code and connection in wokwi for ultrasonic sensor:

```
}#include <WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;

String data3;

#define ORG "3yngbh"

#define DEVICE_TYPE "Assignment"

#define DEVICE_ID "1234"

#define TOKEN "234567890"

#define speed 0.034

#define led 14

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";

char publishTopic[] = "iot-2/evt/shreedharen/fmt/json";

char topic[] = "iot-2/cmd/led/fmt/String";

char authMethod[] = "use-token-auth";

char token[] = TOKEN;

char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

PubSubClient client(server, 1883, wifiClient);

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("Publish OK");

}

}

if(dist>100){

String payload = "{\"Distance\":\"";

payload += dist;

payload += "\"}";

Serial.print("\n");

Serial.print("Sending payload: ");

Serial.println(payload);

if(client.publish(publishTopic, (char*) payload.c_str())) {

Serial.println("Publish OK");

}else {

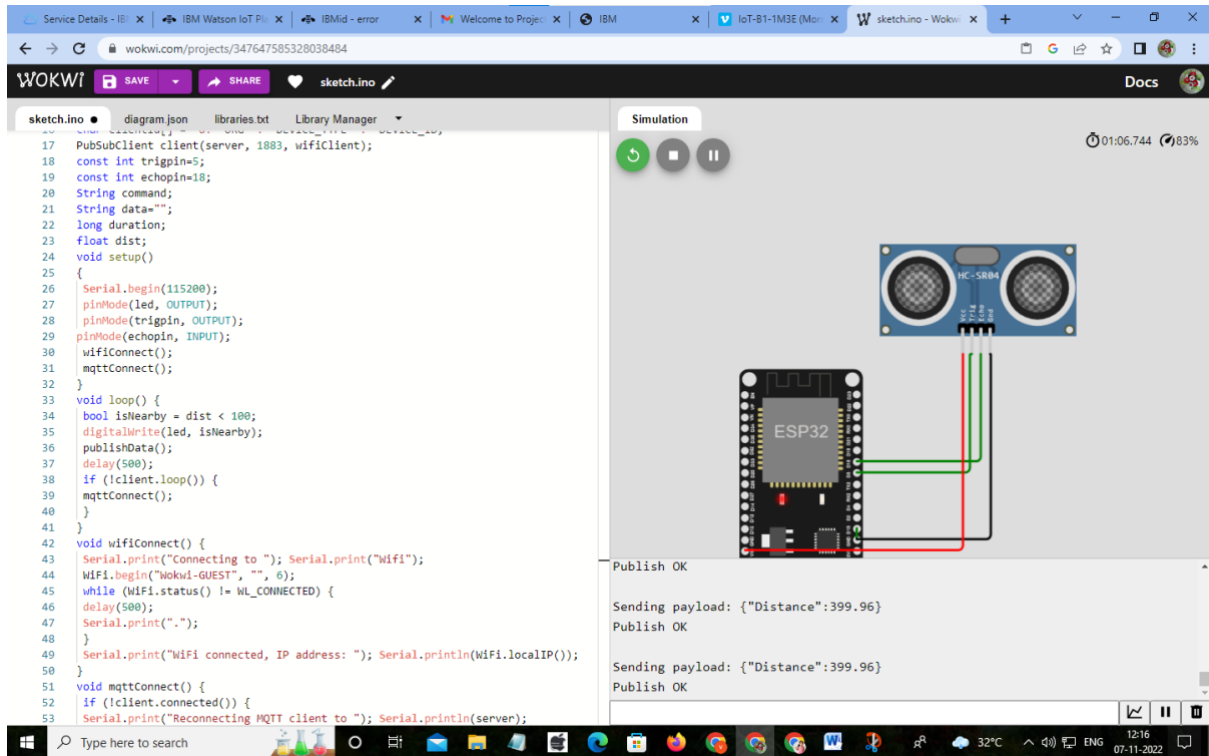
Serial.println("Publish FAILED");

}

}
```

}

Output:



Upload document with wokwi share link and images of ibm cloud:

The screenshot displays the IBM Watson IoT Platform interface. The top navigation bar includes tabs for 'Service Details', 'IBM Watson IoT Platform', 'IBMid - error', 'Welcome to Project', 'IBM', 'IoT-B1-1M3E (Demo)', 'sketchuno - Wokwi', and a '+' icon. The main header shows the URL 'k8g37b.internetofthings.ibmcloud.com/dashboard/devices/browse' and the user '960219104103@smartinernz.com' with ID 'k8g37b'. The left sidebar contains icons for 'Browse', 'Action', 'Device Types', and 'Interfaces'. The main content area has a search bar 'Search by Device ID' and a 'Device Simulator' toggle. A table lists devices, with one selected: Device ID '1234567', Status 'Disconnected', Device Type 'sophiya123', Class ID 'Device', Date Added 'Nov 7, 2022 10:55 AM', and Descriptive Location. Below the table, the 'Recent Events' tab is active, showing a live stream of data. The events table has columns: Event, Value, Format, and Last Received. The events are as follows:

Event	Value	Format	Last Received
event_1	["Alert":73]	json	a few seconds ago
event_1	["Alert":31]	json	a few seconds ago
event_1	["Alert":35]	json	a few seconds ago
event_1	["Alert":9]	json	a few seconds ago
event_1	["Alert":73]	json	a few seconds ago

At the bottom right, a status box indicates '1 Simulation running'.

Wokwi link:

<https://wokwi.com/projects/347647585328038484>