

## Assignment-4

Date	24 October 2022
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Project Name	IoT Based Smart Crop Protection System for Agriculture

### Question :

Write code and connections in wokwi for ultrasonic sensors. That whenever distance is less than 100 cms send "alert" to ibm cloud and display in device recent events.

Upload document with wokwi share link and images.

### Wokwi:

<https://wokwi.com/projects/new/esp32>

### Code:

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

```
WiFiClient wifiClient;
```

```
#define ORG "iyvzfj"
#define DEVICE_TYPE "abcd"
#define DEVICE_ID "sneka"
#define TOKEN "Sneka1805@"
#define speed 0.034
```

```
char server[] = ORG".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/status1/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(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(500);
    }
    initManagedDevice();
    Serial.println();
} }
void initManagedDevice() { if
    (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){
      String payload = "{\"Alert distance\":";
      payload += dist; payload += "}";
  }
}

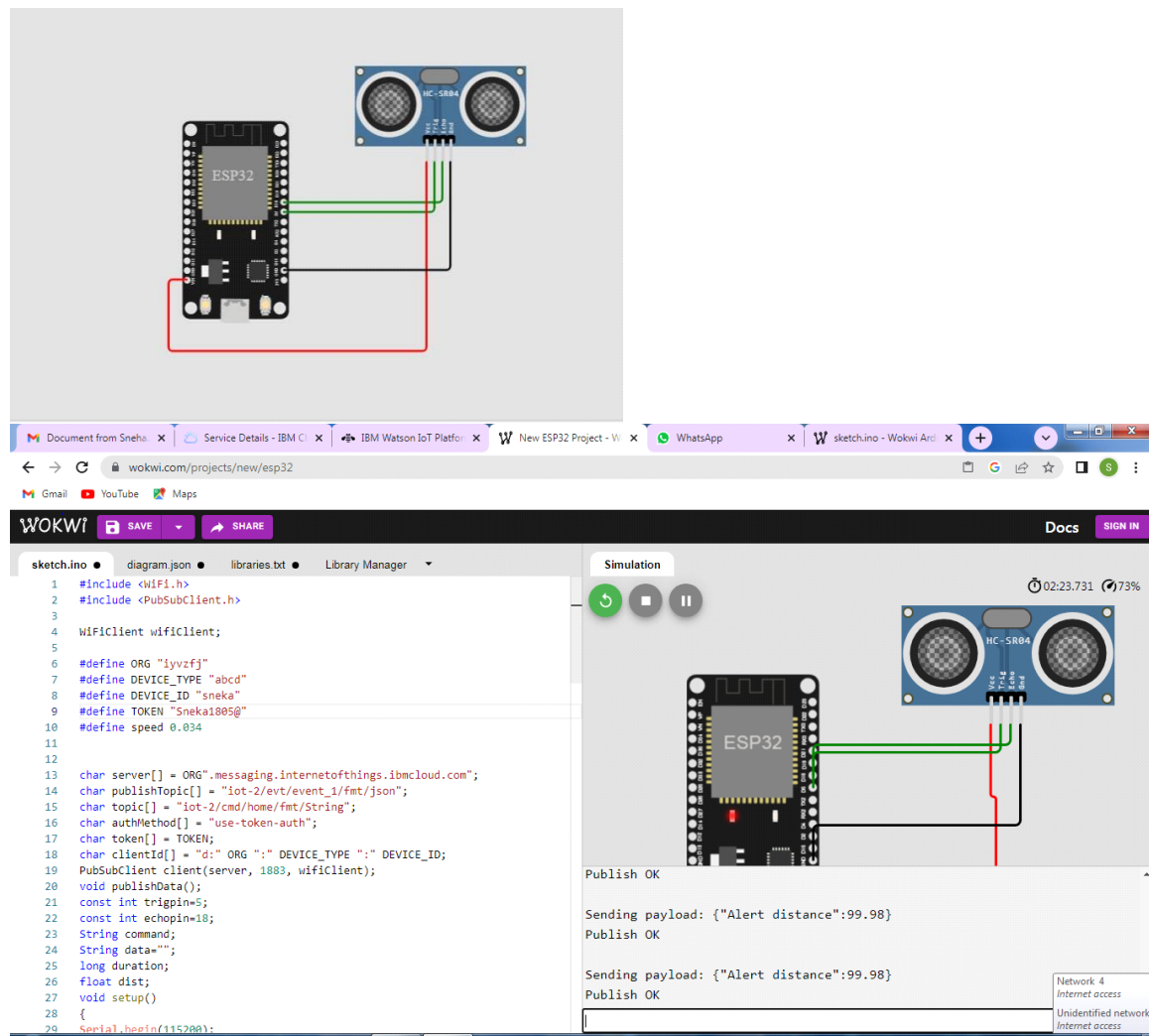
```

```

Serial.print("\n"); Serial.print("Sending
payload: "); Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str())){
    Serial.println("Publish OK");
} else {
    Serial.println("Publish FAILED");
}
}
}

```

**Diagram:**



**Wokwi Output:**

Document from S... Service Details - I... IBM Watson IoT P... IBM Watson IoT P... New ESP32 Proj... WhatsApp sketchino - Wok... +

iyvzfj.internetofthings.ibmcloud.com/dashboard/devices/browse

Gmail YouTube Maps

IBM Watson IoT Platform snekarenu1822@gmail.com ID: iyvzfj

Browse Action Device Types Interfaces Add Device +

## Browse Devices

All Devices Diagnose

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID Device Simulator

Device ID	Status	Device Type	Class ID	Date Added
sneka	Connected	abcd	Device	Nov 15, 2022 4:08 PM

Items per page 50 | 1-1 of 1 item

1 Simulation running

Network 4  
Internet access  
Unidentified network  
Internet access

### IBM cloud output:

Document from S... Service Details - I... IBM Watson IoT P... IBM Watson IoT P... New ESP32 Proj... WhatsApp sketchino - Wok... +

iyvzfj.internetofthings.ibmcloud.com/dashboard/devices/browse

Gmail YouTube Maps

IBM Watson IoT Platform snekarenu1822@gmail.com ID: iyvzfj

Browse Action Device Types Interfaces Add Device +

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

Event	Value	Format	Last Received
event_1	{"randomNumber":30}	json	a few seconds ago
event_1	{"randomNumber":35}	json	a few seconds ago
event_1	{"randomNumber":92}	json	a few seconds ago
event_1	{"randomNumber":12}	json	a few seconds ago
event_1	{"randomNumber":64}	json	a few seconds ago

Items per page 50 | 1-1 of 1 item

1 Simulation running

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