

## Assignment-4

Date	24 October 2022
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Project Name	Smart farmer - Iot Enabled Smart Farming Application.

### 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/348224692890370643>

### Code:

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

WiFiClient wifiClient;

#define ORG "3lm451"
#define DEVICE_TYPE "abcd"
#define DEVICE_ID "801537"
#define TOKEN "12345678"
#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");
            }
        }
    }

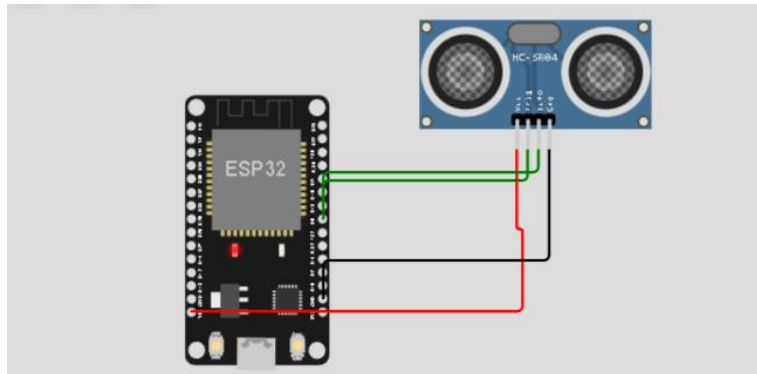
```

```

    }
}
}

```

## Diagram:



## Wokwi Output:

Wokwi simulation interface showing the sketch code and the simulation output.

```

2  #include <PubSubClient.h>
3
4  WiFiClient wifiClient;
5
6  #define ORG "3lm451"
7  #define DEVICE_TYPE "abcd"
8  #define DEVICE_ID "001537"
9  #define TOKEN "12345678"
10 #define speed 0.034
11
12
13 char server[] = ORG".messaging.internetofthings.ibmcloud.com";
14 char publishTopic[] = "iot-2/evt/event_1/fmt/json";
15 char topic[] = "iot-2/cmd/home/fmt/String";
16 char authMethod[] = "use-token-auth";
17 char token[] = TOKEN;
18 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
19 PubSubClient client(server, 1883, wifiClient);
20 void publishData();
21 const int trigpin=5;
22 const int echopin=18;
23 String command;
24 String data="";
25 long duration;
26 float dist;
27 void setup()
28 {
29   Serial.begin(115200);
30   pinMode(trigpin, OUTPUT);
31   pinMode(echopin, INPUT);
32   wifiConnect();

```

Simulation output:

```

Publish OK

Sending payload: {"Alert distance":99.98}
Publish OK

Sending payload: {"Alert distance":99.98}
Publish OK

```

IBM Watson IoT Platform

3lm45l.internetofthings.ibmcloud.com/dashboard/devices/browse

Gmail YouTube Maps

IBM Watson IoT Platform

sapnapriya30072002@gmail.com  
ID: 3lm45l

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
>	801537	Connected	abod	Device	5 Nov 2022 8:29 PM

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1 of 1 page

1 Simulation running

### IBM cloud output:

IBM Watson IoT Platform

3lm45l.internetofthings.ibmcloud.com/dashboard/devices/browse

Gmail YouTube Maps

IBM Watson IoT Platform

sapnapriya30072002@gmail.com  
ID: 3lm45l

Browse Action Device Types Interfaces

Add Device

Identity Device Information Recent Events State Logs

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":44}	json	a few seconds ago
event_1	{"randomNumber":72}	json	a few seconds ago
event_1	{"randomNumber":48}	json	a few seconds ago
event_1	{"randomNumber":81}	json	a few seconds ago
event_1	{"randomNumber":16}	json	a few seconds ago

Items per page 50 | 1-1 of 1 item

1 Simulation running