

#### Assignment-4

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Team ID	PNT2022TMID26547
Date	30-October 2022
Project Name	Project -Smart farmer-IOT enabled smart Farming Application

#### Question:

Write code and connections in wokwi for ultrasonic sensor.

Whenever distance is less than 100cm send "alert" to IBM cloud and display in device recent events.

Upload document with wokwi share link and images of IBM cloud.

#### CODE:

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

#define ORG "17lsro"
#define DEVICE_TYPE "MyDeviceType"
#define DEVICE_ID "12345"
#define TOKEN "GkatKdiUS?UVHKvnAD"

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char pubTopic1[] = "iot-2/evt/SURYA PRAKASH J /fmt/json";
char pubTopic2[] = "iot-2/evt/status2/fmt/json";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
const int DHT_PIN = 15;
WiFiClient wifiClient;
PubSubClient client(server, 1883, NULL, wifiClient);

#define ECHO_PIN 12
#define TRIG_PIN 13

float readDistanceCM() ;
void setup() {
  Serial.begin(115200);
  pinMode(15, OUTPUT);
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);

  Serial.println();
  Serial.print("Connecting to ");

  WiFi.begin("Wokwi-GUEST", "", 6);
```

```

while (WiFi.status() != WL_CONNECTED) {
    delay(50);
    Serial.print(".");
}
Serial.println("");

Serial.print("WiFi connected, IP address: ");
Serial.println(WiFi.localIP());

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

float readDistanceCM()
{
    digitalWrite(TRIG_PIN, LOW);
    delayMicroseconds(2);
    digitalWrite(TRIG_PIN, HIGH);
    delayMicroseconds(10);
    digitalWrite(TRIG_PIN, LOW);
    int duration = pulseIn(ECHO_PIN, HIGH);
    return duration * 0.034 / 2;
}

long lastMsg = 0;
void loop() {
    float distance = readDistanceCM();

    bool isNearby = distance < 100; //checking whether the distance is less than 100
    digitalWrite(15, isNearby);

    Serial.print("Measured distance: ");
    Serial.println(readDistanceCM());

    delay(100);
    if(isNearby) //Whenever the distance is less than 100 cms send an "alert" to the IBM
cloud
    {

        client.loop();
        long now = millis();
        if (now - lastMsg > 3000) {
            lastMsg = now;

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

```

```

    payload += distance;

    payload += "}";

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

    if (client.publish(pubTopic1, (char*) payload.c_str())) {
        Serial.println("Publish ok");
    } else {
        Serial.println("Publish failed");
    }
}
}
}

```

## OUTPUT:

### Case: 1

When Distance Is Above 100 Cm

WOKWI

SAVE

SHARE

Docs

S

sketch.ino

diagram.json

libraries.txt

Library Manager

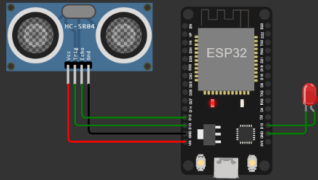
Simulation

00:35.797 101%

```

1  #include <WiFi.h>
2  #include <WiFiClient.h>
3  #include <PubSubClient.h>
4
5  #define ORG "17lsro"
6  #define DEVICE_TYPE "MyDeviceType"
7  #define DEVICE_ID "12345"
8  #define TOKEN "GkatKdiUS?UVHKvnAD"
9
10 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
11 char pubTopic1[] = "iot-2/evt/SURYA PRAKASH J /fmt/json";
12 char pubTopic2[] = "iot-2/evt/status2/fmt/json";
13 char authMethod[] = "use-token-auth";
14 char token[] = TOKEN;
15 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
16 const int DHT_PIN = 15;
17 WiFiClient wifiClient;
18 PubSubClient client(server, 1883, NULL, wifiClient);
19
20
21 #define ECHO_PIN 12
22 #define TRIG_PIN 13
23
24 float readDistanceCM() ;
25 void setup() {
26     Serial.begin(115200);
27     pinMode(15, OUTPUT);
28 }

```

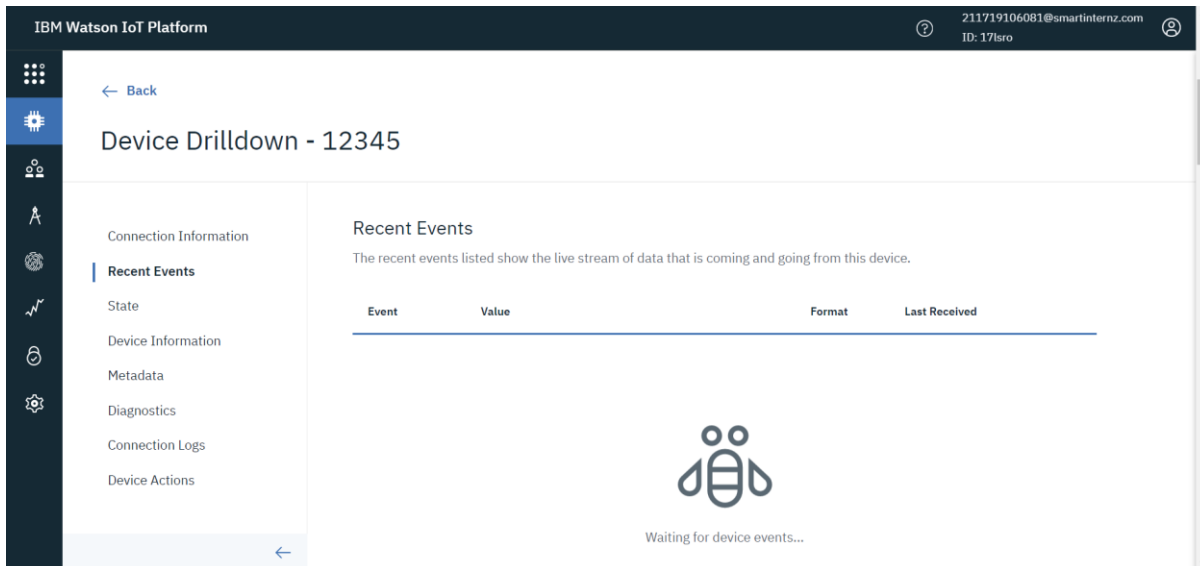


```

Connecting to .....
WiFi connected, IP address: 10.10.0.2
Reconnecting client to
17lsro.messaging.internetofthings.ibmcloud.com
Bluemix connected
Measured distance: 204.95
Measured distance: 204.99

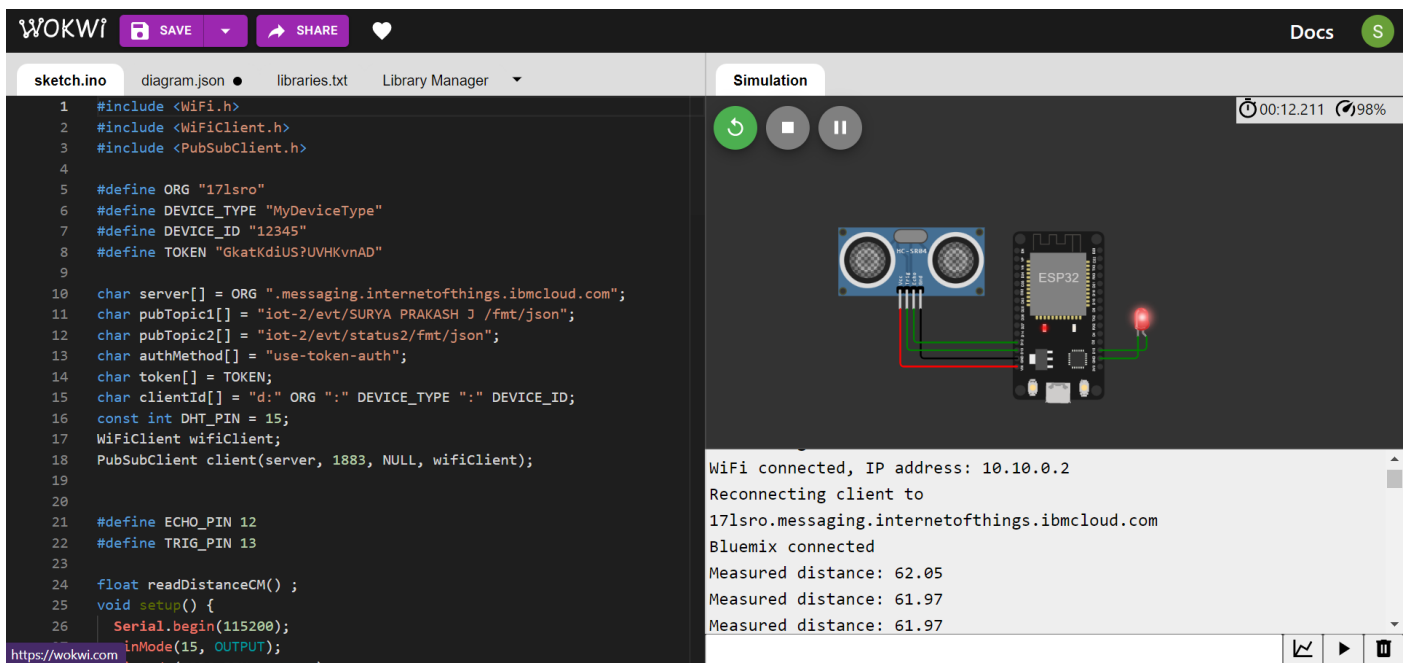
```

## Data Is Not Send to IBM IOT PLATFORM If Distance Is Above 100 Cm



## Case:2

### When Distance Is Below 100 Cm



### When The Distance Is Below 100Cm Data Is Sent To IBM lot Platform

IBM Watson IoT Platform

211719106081@smartinternz.com  
ID: 17lsro

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← 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
SURYA PRAK...	{"distance":61.97}	json	a few seconds ago
SURYA PRAK...	{"distance":61.97}	json	a few seconds ago

State

This table shows a list of data points that are reported by this device.