

## Assignment -4

Assignment Date	27-October 2022
Team ID	PNT2022TMID38164
Project Name	Smart Farmer-IOT Enabled Smart Farming Application
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### QUESTION:

Write code and connections in wokwi for ultrasonic sensor. 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 of ibm cloud.

### CODE:

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

WiFiClient wifiClient;
#define ORG "fvdupc"

#define DEVICE_TYPE "abcd"
#define DEVICE_ID "rasp"
#define TOKEN "12345678"
#define speed 0.034

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/abcd_1/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="";
String lat="14.167589";
String lon="80.248510";
String name="point2";
String
icon=""; 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);
}

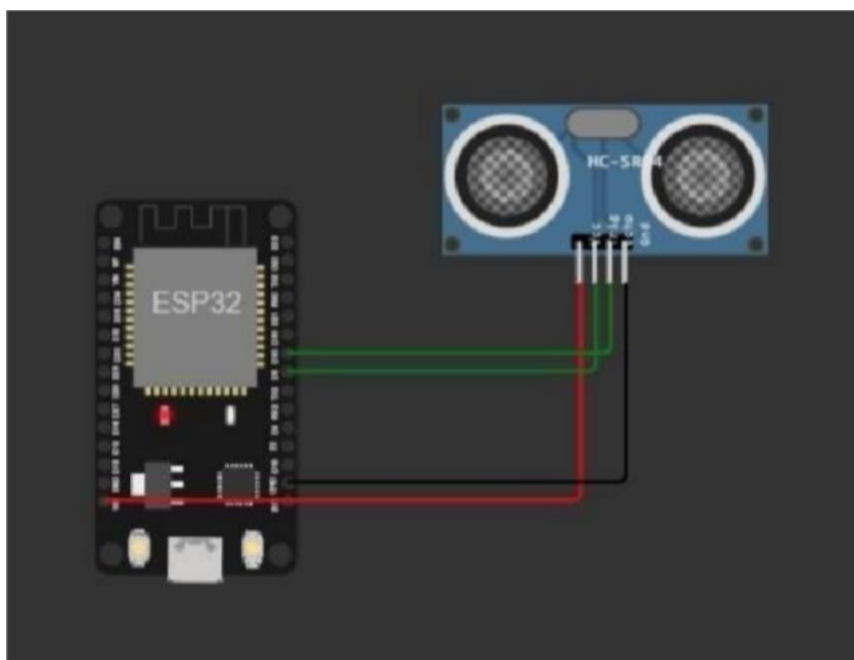
```

```

digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2;
if(dist<100){
    dist=100-dist; icon="fa-
trash";
}else{ dist=0;
    icon="fa-trash-
o";
}
DynamicJsonDocument doc(1024);
String payload;
doc["Name"]=name;
doc["Latitude"]=lat;
doc["Longitude"]=lon;
doc["Icon"]=icon;
doc["FillPercent"]=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");
}
}

```

## CONNECTIONS:



## WOKWI LINK:

<https://wokwi.com/projects/346590330080985684>

## OUTPUT:



The screenshot displays the Wokwi IDE interface. On the left, the 'Sketch' tab shows the following code:

```
1 #include <SPI.h>
2 #include <PubSubClient.h>
3 #include <Arduino.h>
4
5 #if !defined(WIFI_SSID)
6
7 #define DFG "fvdhuc"
8 #define DEVICE_TYPE "node"
9 #define DEVICE_ID "naso"
10 #define TOKEN "12345678"
11 #define speed 0.018
12
13 char server[] = DFG "messaging.internetofthings.thingcloud.com";
14 char publishTopic[] = "iot-2/evt/used_1/evt/json";
15 char topic[] = "iot-2/cmd/range/int/string";
16 char authHeader[] = "use-token-auth";
17 char token[] = TOKEN;
18 char clientId[] = "d-" ORG "-" DEVICE_TYPE "-" DEVICE_ID;
19 PubSubClient client(server, 1883, authHeader);
20 void publishData();
21
22 const int trigPin=5;
23 const int echoPin=10;
24 String command;
25 String data="";
26 String lat="14.167589";
27 String lon="80.248510";
28 String name="point2";
29 String icon="";
30
31 long duration;
32 int dist;
33
34 void setup()
35 {
```

On the right, the 'Simulation' tab shows a visual representation of the ESP32 and the HC-SR04 sensor connected by wires. Below the simulation, the output log shows the following messages:

```
subscribe to cmd OK
Sending payload:
{"Name":"point2","latitude":"14.167589","Longitude":"80.248510","Icon":"fa-trash-o","FullPercent":0}
Publish OK
```