# ASSIGNMENT 4

# WOKWI

| | |
|---|---|
| **TEAM ID** | **PNT2022TMID05745** |
| **Project name** | **IOT based smart crop protection for agriculture** |
| **Student Name** | **Shoumithra** |
| **Student Roll Number** | **1901222** |
| **Maximum Marks** | **2 Marks** |

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Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cm send an "alert" to the IBM cloud and display in the device recent events. Upload document with wokwi share link and images of IBM cloud

Program:

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

WiFiClient wifiClient;

#define ORG "kr9fjo"
#define DEVICE_TYPE "TestDeviceType"
#define DEVICE_ID "12345"
#define TOKEN "VJsSC148dk1dCN3UqS"
#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();
  }
}

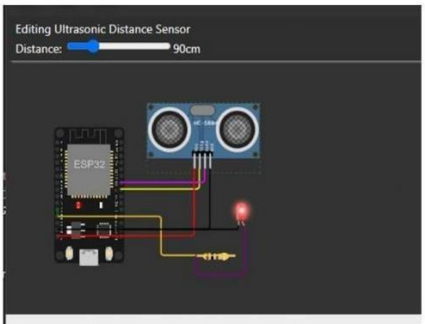
void wifiConnect() {
  Serial.print("Connecting to "); Serial.print("Wifi");
  WiFi.begin("Wokwi-GUEST", "", 6);
  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(".");
  }
  Serial.print("WiFi connected, IP address: ");
Serial.println(WiFi.localIP());
}

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");
  }
}
```

# OUTPUT




```
Sending payload: {"Normal Distance":89.95}
Publish OK

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Publish OK

Sending payload: {"Normal Distance":89.98}
Publish OK

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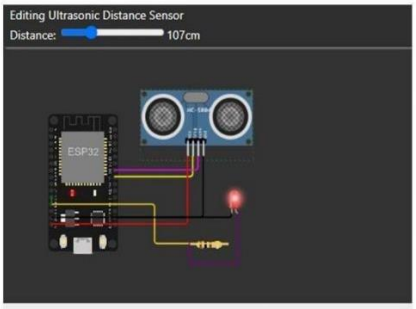
Publish OK
```

**1) when distance under 100 cm**
**it wil show normal distance**




```
Sending payload: {"Alert distance":106.98}
Warning crosses 110cm -- it automaticaly of the loop

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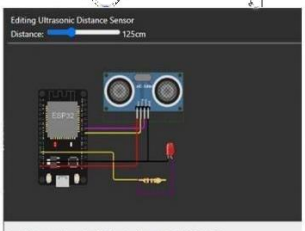
```

**2) when distance cross 100 cm**
**it wil show ALERT with warning message**
**distance**

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```

**when it cross above 110 cm it totaly**
**move to iff state once it reduce to 110 it on again**

# IBM CLOUD OUPUT

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 |
|---|---|---|---|
| Data | {"Normal Distance":89.95} | json | a few seconds ago |
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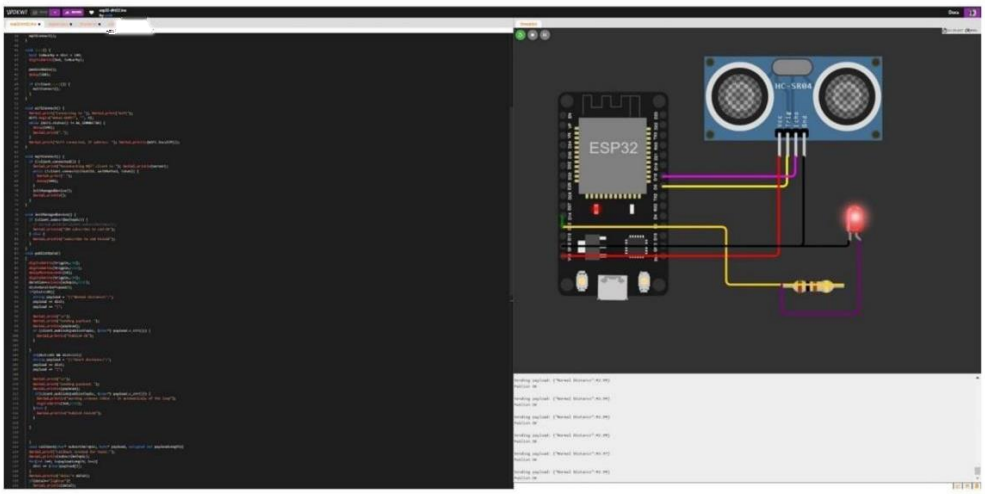
| Event | Value | Format | Last Received |
|---|---|---|---|
| Data | {"Alert distance":106.98} | json | a few seconds ago |
| Data | {"Alert distance":107.03} | json | a few seconds ago |
| Data | {"Alert distance":106.98} | json | a few seconds ago |
| Data | {"Alert distance":106.98} | json | a few seconds ago |
| Data | {"Alert distance":106.98} | json | a few seconds ago |




## Connection Information

Basic connection information about this device.

| | |
|---|---|
| **Device ID** | Assignment4 |
| **Device Type** | nodeMcu |
| **Date Added** | 23 Oct 2022 07:20 |
| **Connection Status** | **Disconnected**<br>Last Connected: 23 Oct 2022 16:57<br>Client Address: 145.40.94.93 Insecure<br>Duration: 3 minutes<br>Data Transferred: 14.4 KB |

## 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 |
|---|---|---|---|
| Data | {"Normal Distance":92.99} | json | a few seconds ago |
| Data | {"Normal Distance":92.99} | json | a few seconds ago |
| Data | {"Normal Distance":92.99} | json | a few seconds ago |
| Data | {"Normal Distance":92.99} | json | a few seconds ago |
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