

ASSIGNMENT 4

WOKWI

TEAM ID	PNT2022TMID21422
Project name	IOT Based Smart Crop Protection For Agriculture
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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;

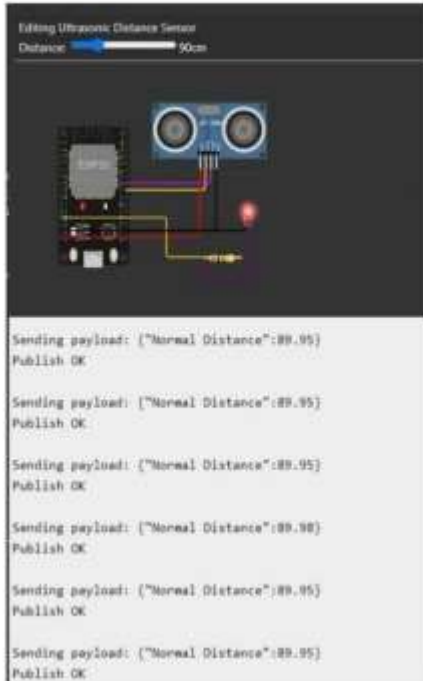
```

```

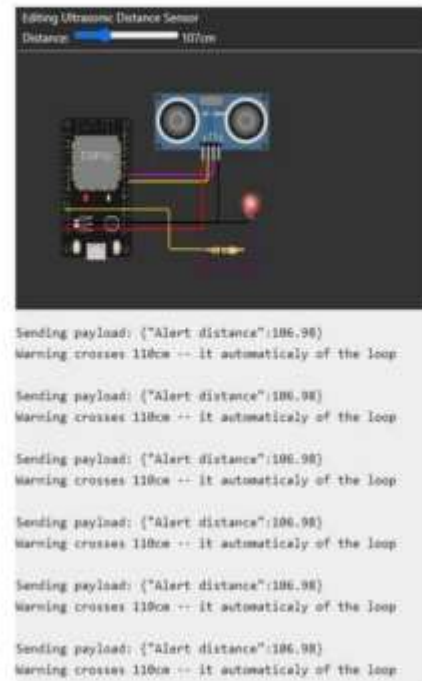
icon="fa-trash";
}else{    dist=0;
icon="fa-trash-o";
}
DynamicJsonDocument doc(1024);
String payload;    doc["Name"]=name;
doc["Latitude"]=lat;
doc["Longitude"]=lon;
doc["Icon"]=icon;
doc["FillPercent"]=dist;
serializeJson(doc, payload);
delay(3000);
    Serial.print("\n");
    Serial.print("Sending payload: ");
Serial.println(payload);
    if (client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Publish OK");
    } else {
        Serial.println("Publish FAILED");
    }
}
}

```

OUTPUT



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



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



**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

This report is generated from the data stream of the data coming and going from this device.

Date	Value	Format	Last Modified
Date	["Normal Distance":89.95]	json	a few seconds ago
Date	["Normal Distance":89.95]	json	a few seconds ago
Date	["Normal Distance":89.95]	json	a few seconds ago
Date	["Normal Distance":89.95]	json	a few seconds ago
Date	["Normal Distance":89.95]	json	a few seconds ago

Recent Events

This report is generated from the data stream of the data coming and going from this device.

Date	Value	Format	Last Modified
Date	["Alert distance":106.96]	json	a few seconds ago
Date	["Alert distance":106.98]	json	a few seconds ago
Date	["Alert distance":106.98]	json	a few seconds ago
Date	["Alert distance":106.98]	json	a few seconds ago
Date	["Alert distance":106.98]	json	a few seconds ago

