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

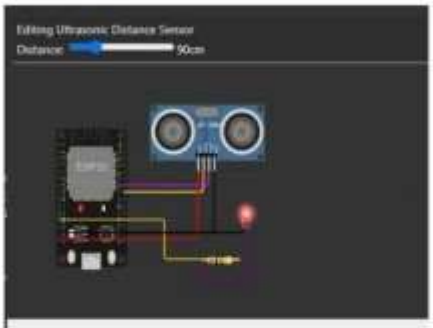
Program:

```
#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;
```

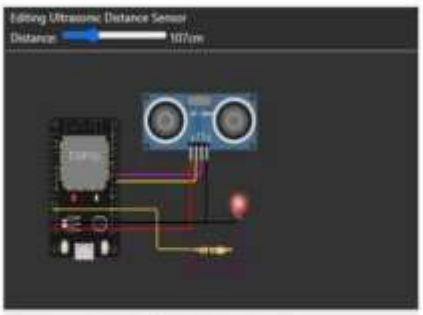
```
icon="fa-trash";
}else{     dist=0;
icon="fa-trash-o";
  }
  DynamicJsonDocument doc(1024);
String payload;   doc["Name"]=name;
doc["Latitude"]=lat;
doc["Longitude"]=lon;
doc["Icon"]=icon;
doc["FillPercent"]=dist;
serializeJson(doc, payload);
delay(3000);
  Serial.print("\n");
  Serial.print("Sending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

OUTPUT




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

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

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

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

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

Sending payload: {"Normal Distance":89.95}
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

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

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