ASSIGNMENT 4

WOKWI

TEAM ID	**PNT2022TMID26073**
Project name	**IOT based smart crop protection for agriculture**
Student Name	**SHAIK MUSHARRAF**
Student Roll Number	**211519106144**
Maximum Marks	**2 Marks**

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;

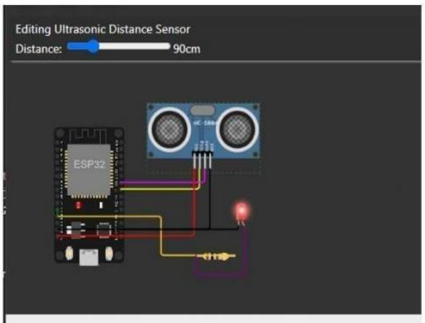
#define ORG "kr9fjo"
#define DEVICE_TYPE "TestDeviceType"
#define DEVICE_ID "12345"
#define TOKEN "VJsSC148dk1dCN3UqS"
#define speed 0.034
 char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[]
= "iot-2/evt/abcd_1/fmt/json"; char topic[] = "iot-
2/cmd/home/fmt/String";   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

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Publish OK

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

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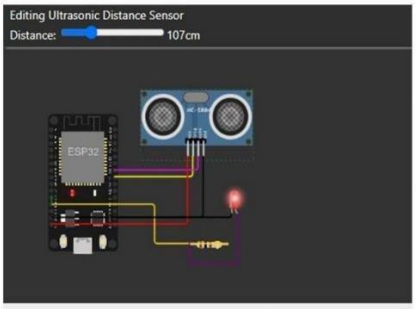
Publish OK
```

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

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

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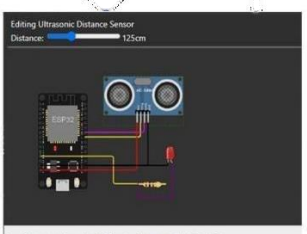
2) when distance cross 100 cm
it wil show ALERT with warning message
distance

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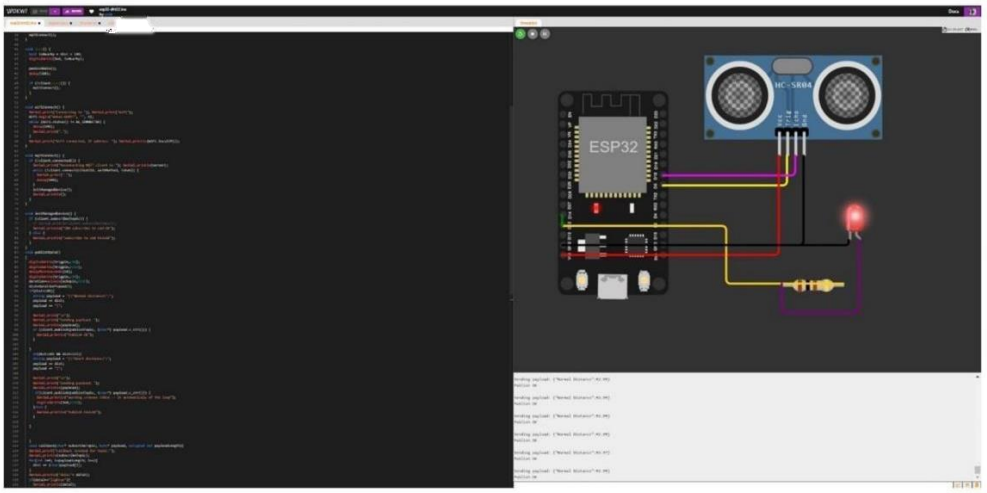
Event	Value	Format	Last Received
Data	{"Alert distance":106.98}	json	a few seconds ago
Data	{"Alert distance":107.03}	json	a few seconds ago
Data	{"Alert distance":106.98}	json	a few seconds ago
Data	{"Alert distance":106.98}	json	a few seconds ago
Data	{"Alert distance":106.98}	json	a few seconds ago



Connection Information

Basic connection information about this device.

Device ID	Assignment4
Device Type	nodeMcu
Date Added	23 Oct 2022 07:20
Connection Status	**Disconnected** Last Connected: 23 Oct 2022 16:57 Client Address: 145.40.94.93 Insecure Duration: 3 minutes 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
Data	{"Normal Distance":92.99}	json	a few seconds ago