

## ASSIGNMENT 4

<b>Date</b>	03 NOV 2022
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<b>Project Name</b>	SmartFarmer – IoT Enabled Smart Farming Application

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>
WiFiClient wifiClient;
String data3;
#define ORG "8pixq0"
#define DEVICE_TYPE "abinibreen"
#define DEVICE_ID "lotusflower"
#define TOKEN "7QJhkdb7Vxds5YnYER"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/AbiniBreen/fmt/json";
char topic[] = "iot-2/cmd/led/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);
```

```
const int trigpin=5;
const int echopin=18;
String command;
String data="";
```

```
long duration;
float dist;
```

```
void setup()
{
  Serial.begin(115200);
  pinMode(led, OUTPUT);
  pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
  wifiConnect();
  mqttConnect();
}
```

```
void loop() {
  bool isNearby = dist < 100;
  digitalWrite(led, isNearby);
```

```
  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(500);
        }
        initManagedDevice();
        Serial.println();
    }
}

```

```

void initManagedDevice() {
    if (client.subscribe(topic)) {

// Serial.println(client.subscribe(topic));
        Serial.println("IBM 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){
        String payload = "{\"Alert Distance\":\"";
        payload += dist;
        payload += "\"}";
    }
}

```

```

Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if (client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish OK");
}
}

```

```

}
if(dist>100){
    String payload = "{\"Distance\":\"";
    payload += dist;
}

```

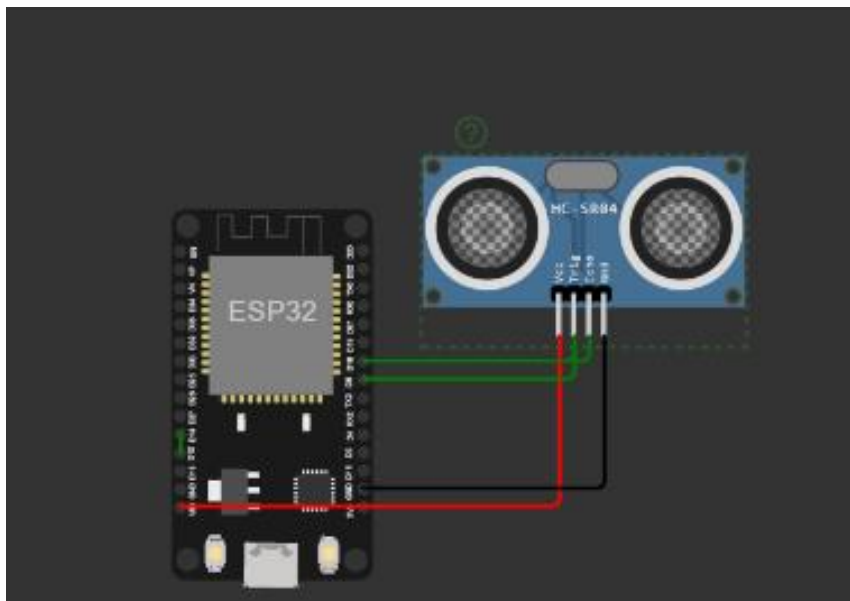
```
payload += "}";

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:



## OUTPUT:

Docs

Simulation

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Editing Ultrasonic Distance Sensor

Distance:  97cm

ESP32

HC-SR04

Vcc

Trig

Echo

Gnd

Sending payload: {"Alert Distance":96.99}

Publish OK

Sending payload: {"Alert Distance":97.00}

Publish OK

## IBM Cloud Output:

IBM Watson IoT Platform

960219106006@amartinternz.com  
ID: 8pixq0

Browse

Action

Device Types

Interfaces

Add Device

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
AbiniBreen	{"Alert Distance":96.97}	json	a few seconds ago
AbiniBreen	{"Alert Distance":97.39}	json	a few seconds ago
AbiniBreen	{"Alert Distance":97}	json	a few seconds ago
AbiniBreen	{"Alert Distance":96.99}	json	a few seconds ago
AbiniBreen	{"Alert Distance":97}	json	a few seconds ago

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**WOWKI Link :**

**<https://wokwi.com/projects/347319170276262484>**