

## **ASSIGNMENT 4**

**Kaviprakash( Team Leader ), Chiradeep, Kumaravel, Poovarasan**

Write code and connection in wokwi for the ultrasonic sensor.  
Whenever the distance is less than 100 cms 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

### **CODE :**

```
#include <WiFi.h>
#include
<PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG
"53soe3"//IBM
ORGANITION ID
#define DEVICE_TYPE
"ESP32_Controller"//De
vice type mentioned in
ibm watson IOT
Platform
#define DEVICE_ID
"hcsr04_Sensor"//Device
ID mentioned in ibm
watson IOT Platform
#define TOKEN
"*5_hDNlAekWcCePhia
"
#define speed 0.034
#define led 14
char server[] = ORG
".messaging.internetofthi
ngs.ibmcloud.com";
```

```
char publishTopic[] =
"iot-
2/evt/status/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.localI
P());
}

void mqttConnect() {
    if (!client.connected())
    {

        Serial.print("Reconnecti
ng 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.subs
cribe(topic));
    Serial.println("IBM
subscribe to cmd OK");
    } else {

    Serial.println("subscribe
to cmd FAILED");
    }
}
void publishData()
{

digitalWrite(trigpin,LO
W);

digitalWrite(trigpin,HIG
H);
    delayMicroseconds(10);

digitalWrite(trigpin,LO
W);

duration=pulseIn(echopi
n,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(publishTo  
pic, (char*)  
payload.c_str())) {
```

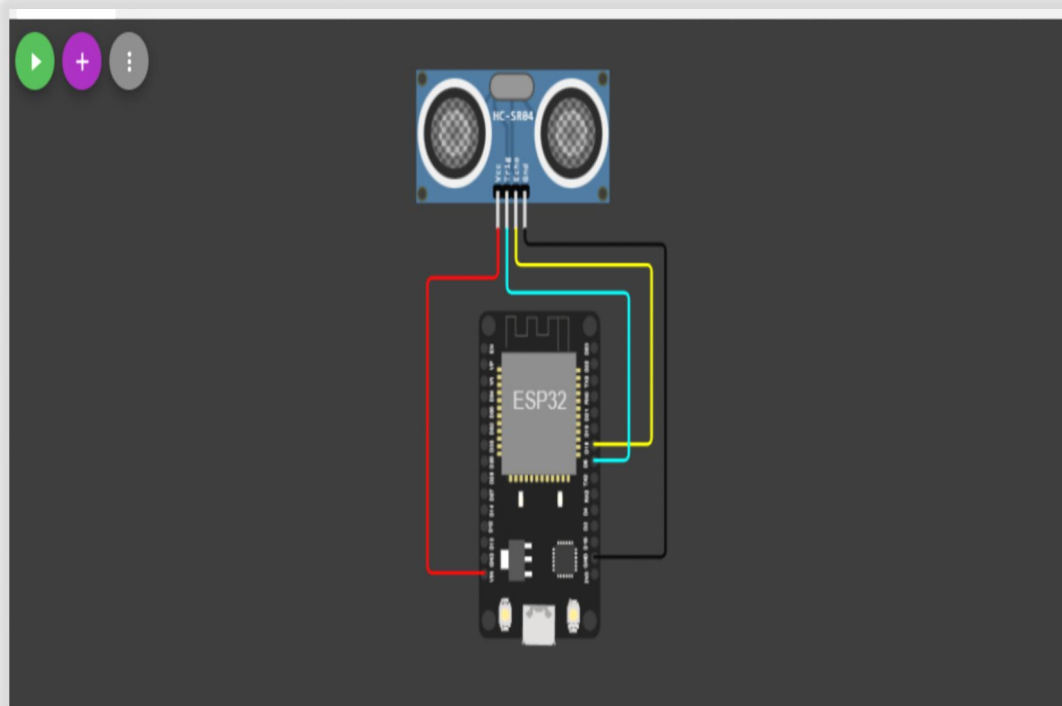
```
    Serial.println("Publish  
OK");  
    }  
    }  
    if(dist>100){  
        String payload =  
        "{\"Distance\":";  
        payload += dist;  
        payload += "}";  
        Serial.print("\n");  
        Serial.print("Sending  
payload: ");  
        Serial.println(payload);
```

```
    if(client.publish(publish  
Topic, (char*)  
payload.c_str())) {
```

```
    Serial.println("Publish  
OK");  
    }else {
```

```
    Serial.println("Publish  
FAILED");  
    }  
    }  
    }
```

## **CONNECTIONS:**



## OUTPUT:

```
Simulation
Connecting to Wifi....WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to 53soe3.messaging.internetofthings.ibmcloud.com
IBM subscribe to cmd OK

Sending payload: {"Distance":400.01}
Publish OK

Sending payload: {"Distance":399.96}
Publish OK
```

## CLOUD IMAGE:

Search by Device ID

Device Simulator ☒ 101

☐

Device ID

☐

Status

☐

Device Type

☐

Class ID

hcsr04\_Sensor

Connected

ESP32\_Controller

Device

Identity

Device Information

Recent Events

State

Logs

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

| Event  | Value               | Format | Last Received     |
|--------|---------------------|--------|-------------------|
| status | {"Distance":399.96} | json   | a few seconds ago |
| status | {"Distance":399.92} | json   | a few seconds ago |
| status | {"Distance":399.96} | json   | a few seconds ago |
| status | {"Distance":399.96} | json   | a few seconds ago |
| status | {"Distance":399.96} | json   | a few seconds ago |

Items per page 50 | 1-1 of 1 item

1 of 1 page

< 1 >

## WOKWI LINK:

<https://wokwi.com/projects/348040555192648276>