

## Assignment 4

**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 "ozyf7e"
#define DEVICE_TYPE "AnuESP"
#define DEVICE_ID "Anu123"
#define TOKEN "12345678"
#define speed 0.034 #define
led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com"; char
publishTopic[]
= "iot-2/evt/shreedharen/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);
}

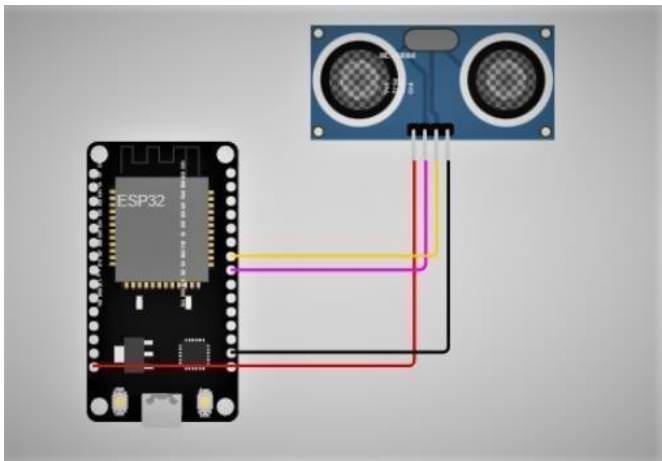
```

```

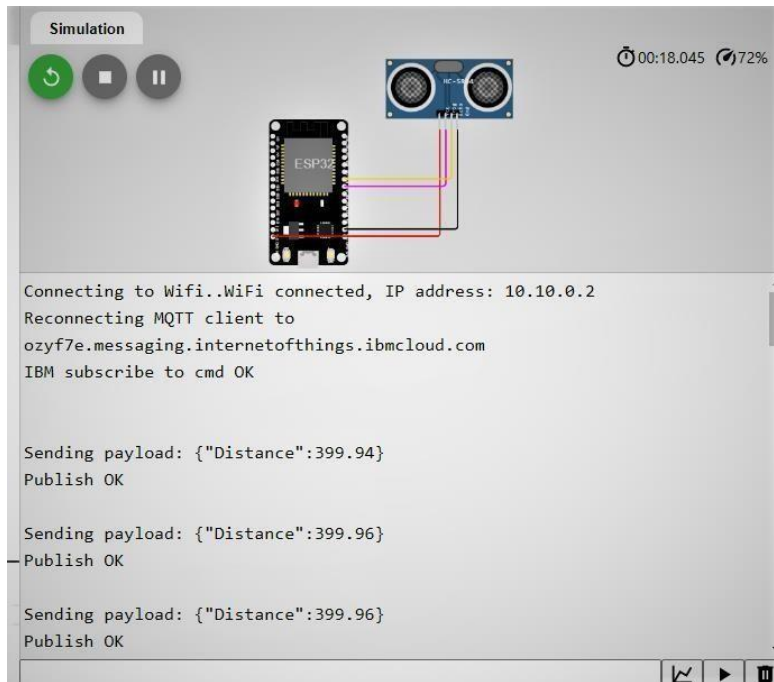
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2; if(dist<100){
    String payload = "{\"Alert Distance\":\""; payload +=
    dist;
    payload += "\"}"; Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
    if (client.publish(publishTopic, (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:



## Cloud image:

Device ID	Status	Device Type	Class ID	Date Added
▼ <input type="checkbox"/> Anu123	Connected	AnuESP	Device	Nov 2, 2022 11:20 AM
<div>Identity</div> <div>Device Information</div> <div>Recent Events</div> <div>State</div> <div>Logs</div>				
The recent events listed show the live stream of data that is coming and going from this device.				
Event	Value	Format	Last Received	
Data	{"Distance":403.49,"object":"","No Object"}	json	a few seconds ago	
Data	{"Distance":403.49,"object":"","No Object"}	json	a few seconds ago	
Data	{"Distance":403.49,"object":"","No Object"}	json	a few seconds ago	
Data	{"Distance":403.49,"object":"","No Object"}	json	a few seconds ago	
Data	{"Distance":403.49,"object":"","No Object"}	json	a few seconds ago	

## Wokwi link:

<https://wokwi.com/projects/347195489784955474>