

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 ibmcloud

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()
{

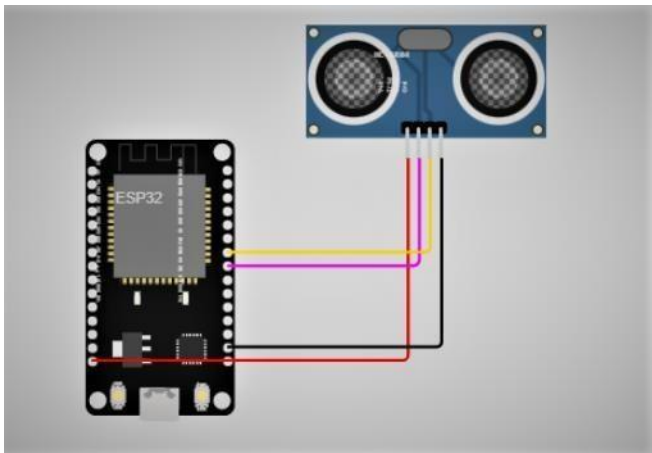
```

```

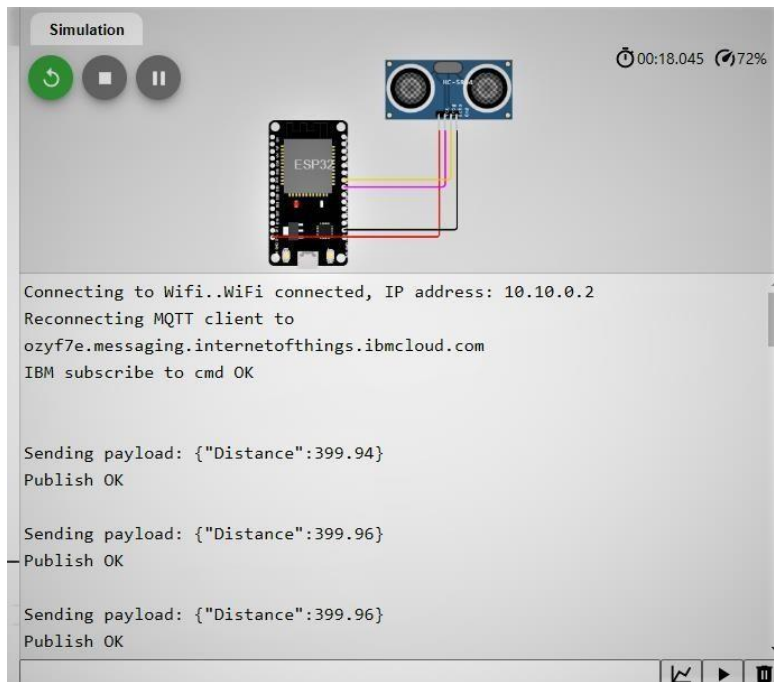
digitalWrite(trigpin,LOW);
digitalWrite(trigpin,HIGH);
delayMicroseconds(10);
digitalWrite(trigpin,LOW);
duration=pulseIn(echopin,HIGH);
dist=duration*speed/2; if(dist<100){
    String payload = "{\"Alert Distance\":\"";payload +=
    dist;
    payload += "\"}"; Serial.print("\n");
    Serial.print("Sending 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
Anu123	Connected	AnuESP	Device	Nov 2, 2022 11:20 AM
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	
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>