ASSIGNMENT-4

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Write code and connections 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. Uploaddocument with wokwi share link and images of IBM cloud

CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG " w63u2p"
#define DEVICE_TYPE "NodeMCU"
#define DEVICE_ID "12345"
#define TOKEN "12345678"
#define speed 0.034
#define led 14
char server[] = ORG ".internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Gayathri/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="";

long duration;
```

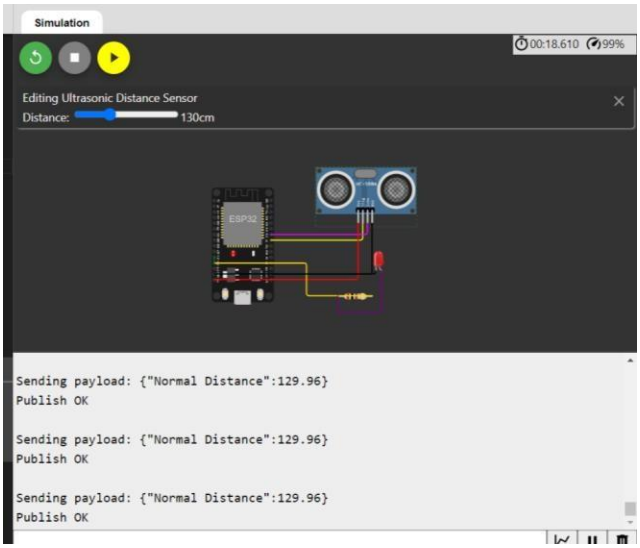
```
float dist;



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 = "{\"Normal 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 = "{\"Alert distance\":";
```

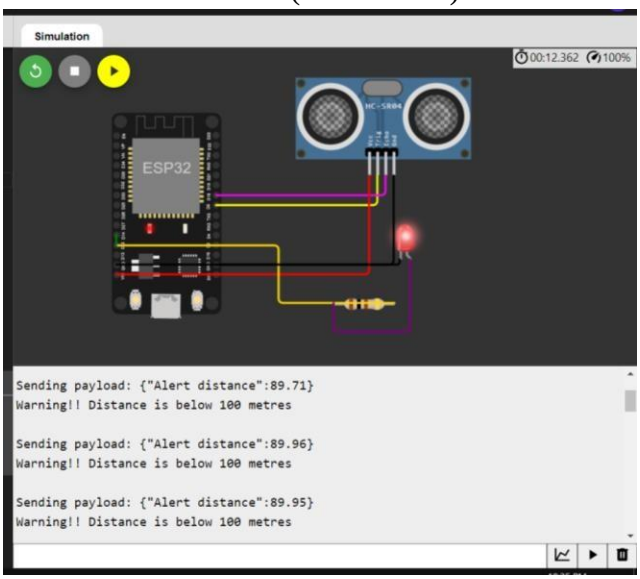
```
        payload += dist;payload
        += "}";

        Serial.print("\n"); Serial.print("Sending payload:
        ");Serial.println(payload);
          if(client.publish(publishTopic, (char*) payload.c_str())) {Serial.println("Warning!!
            Distance is above 100 metres"); digitalWrite(led,HIGH);
        }else {
            Serial.println("Publish FAILED");
        }


    }



    }
    void callback(char* subscribeTopic, byte* payload, unsigned intpayloadLength){
    Serial.print("callback invoked for topic:");
    Serial.println(subscribeTopic); for(int i=0;
    i<payloadLength; i++){
        dist += (char)payload[i];
    }
    Serial.println("data:"+ data3);
    if(data3=="lighton"){
        Serial.println(data3);
        digitalWrite(led,HIGH);
    }
    data3="";
}
```

OUTPUT:

1. NORMAL DISTANCE (Above 100m)



2. ALERT DISTANCE (Below 100m)



DEVICE RECENT EVENTS

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