

## ASSIGNMENT 4

<b>Date</b>	08 Nov 22
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<b>Project Name</b>	Smart Waste Management For Metropolitan Cities

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;

#define ORG "nhpwjc"
#define DEVICE_TYPE "NodeMCU"
#define DEVICE_ID "USE YOUR ID"
#define TOKEN "USE YOUR TOKEN"
#define speed 0.034

char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char
publishTopic[] = "iot-2/evt/Data/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(trigpin, OUTPUT);
```

```

pinMode(echopin, INPUT);
wifiConnect(); mqttConnect();
} void loop() {

    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("subscribe to
        cmd OK");
    } else {
        Serial.println("subscribe to cmd FAILED"); } }

void publishData()
{ digitalWrite(trigpin, LOW);
  digitalWrite(trigpin, HIGH);

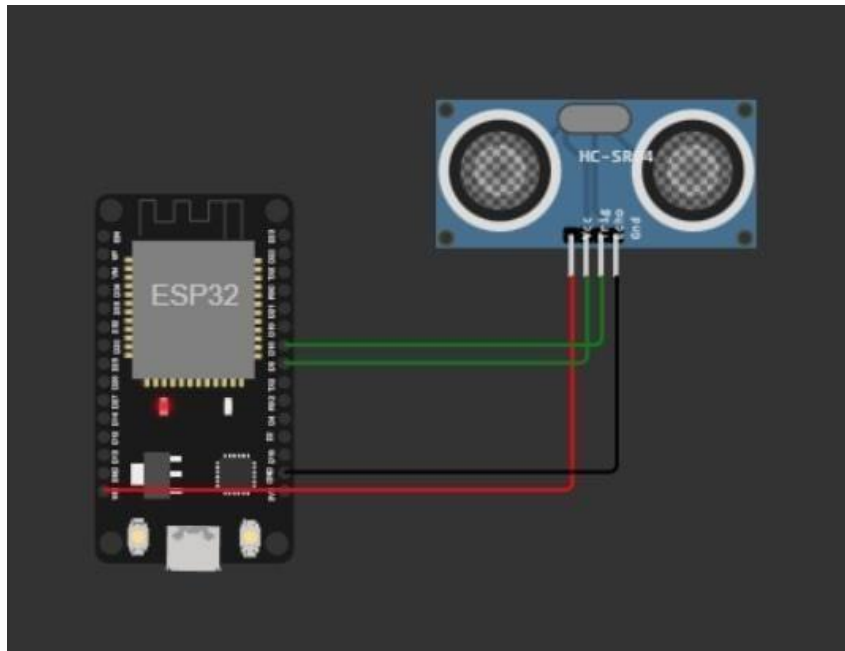
```

```

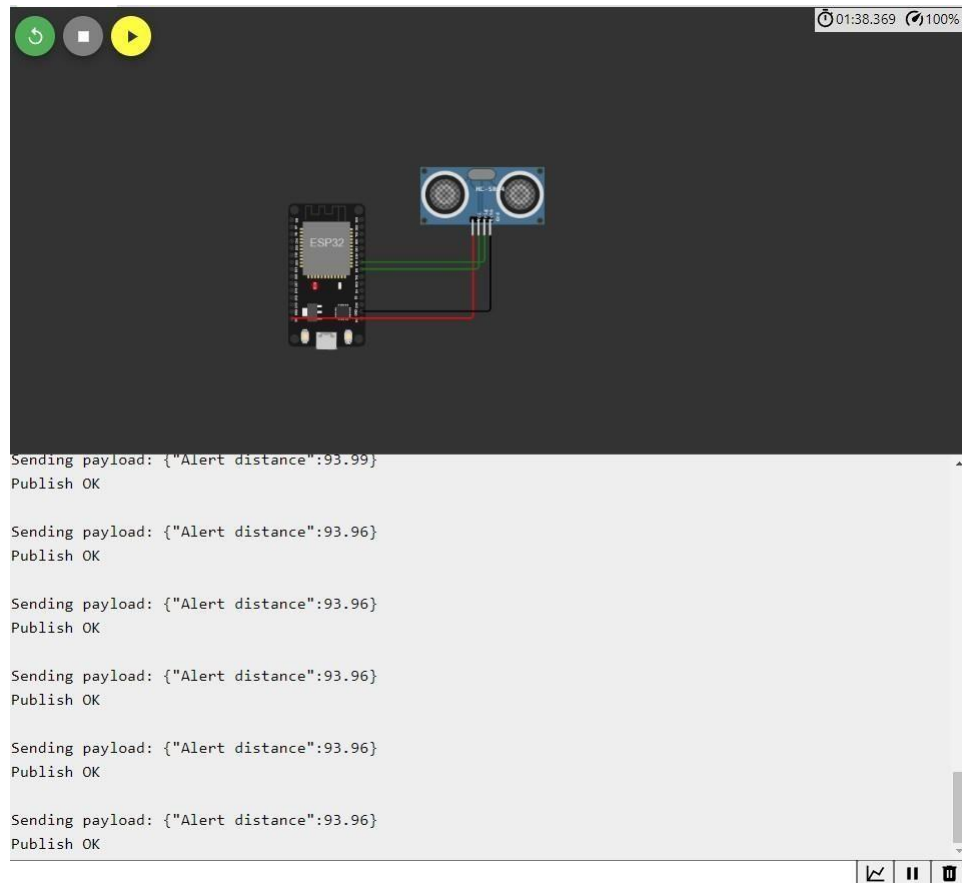
delayMicroseconds(10);
digitalWrite(trigpin, LOW);
duration=pulseIn(echopin, HIGH);
dist=duration*speed/2;
if(dist<100){
  String payload = "{\"Alert distance\":\"";
  payload += dist;
  payload += "\"}";
  Serial.print("\n");
  Serial.print("Sending payload: ");
  Serial.println(payload);
  if (client.publish(publishTopic,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

```

## CONNECTIONS:



**OUTPUT:**



This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID

Device Simulator ☐

<input type="checkbox"/> Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By	Device Class	Firmware Version
<input checked="" type="checkbox"/> 12345	<span style="color: green;">●</span> Connected	NodeMCU	Device	Oct 17, 2022 2:36 PM		111719106009@smartinterruz.com		

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	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago
Data	{"Alert distance":93.96}	json	a few seconds ago

Items per page 100 | 1–1 of 1 item

1 of 1 page