

IBM ASSIGNMENT -4

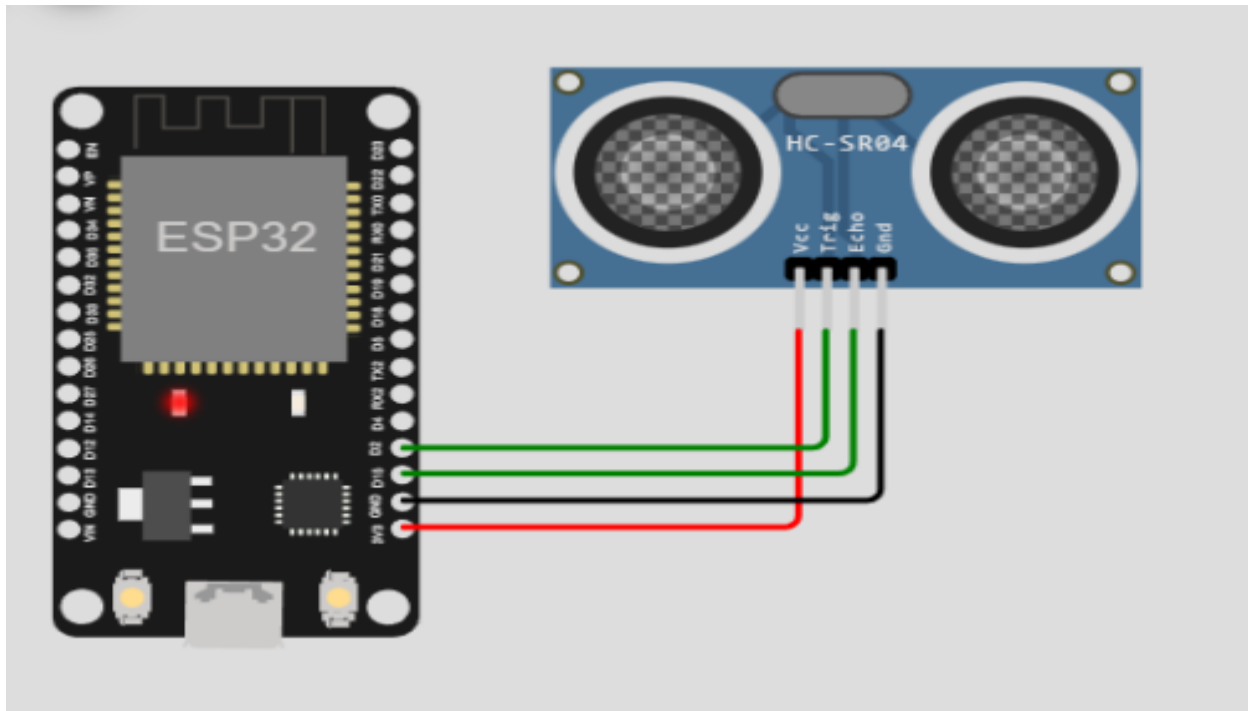
QUESTION:-

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.

CHINNAN S

CONNECTION

CLICK HERE TO([WOKWI](#))



PROGRAM :-

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>

WiFiClient wifiClient;
///Organization ID illza1
///Device Type assignment4
///Device ID chinnan
///Authentication Method use-token-auth
///Authentication Token 87654321
```

```

#define ORG "illza1"
#define DEVICE_TYPE "assignment4"
#define DEVICE_ID "chinnan"
#define TOKEN "87654321"
#define speed 0.034

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/iot/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=2;
const int echopin=15;
String command;
String data="";
String lat="14.167589";
String lon="80.248510";
String name="point2";
String icon="";

long duration;
int 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(1000);
        }
        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){
    dist=100-dist;
    icon="fa-trash";
}else{
    dist=0;
    icon="fa-trash-o";
}
DynamicJsonDocument doc(1024);
String payload;
doc["Name"]=name;
doc["Latitude"]=lat;
doc["Longitude"]=lon;
doc["Icon"]=icon;
doc["FillPercent"]=dist;
serializeJson(doc, payload);
delay(3000);
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");
}
}

```

IBM SCREENSHOT'S

WOKWI

SAVE

SHARE

Docs

sketch.ino

diagram.json

libraries.txt

Library Manager

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 #include <ArduinoJson.h>
4
5 WiFiClient wifiClient;
6 ///Organization ID illza1
7 //Device Type assignment4
8 //Device ID chinnan
9 //Authentication Method use-token-auth
10 //Authentication Token 87654321
11
12 #define ORG "illza1"
13 #define DEVICE_TYPE "assignment4"
14 #define DEVICE_ID "chinnan"
15 #define TOKEN "87654321"
16 #define speed 0.034
17
18 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
19 char publishTopic[] = "iot-2/evt/iot/fmt/json";
20 char topic[] = "iot-2/cmd/home/fmt/String";
21 char authMethod[] = "use-token-auth";
22 char token[] = TOKEN;
23 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
24 PubSubClient client(server, 1883, wifiClient);
25 void publishData();
26
27 const int trigpin=2;
28 const int echopin=15;
29 String command;
30 String data="";
31 String lat="14.167589";
32 String lon="80.248510";
33 #define speed 0.034
```

Simulation

01:39.989 99%

Connecting to Wifi..WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to
illza1.messaging.internetofthings.ibmcloud.com

chinnan Disconnected assignment4 Device Oct 29, 2022 3:13 PM

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.

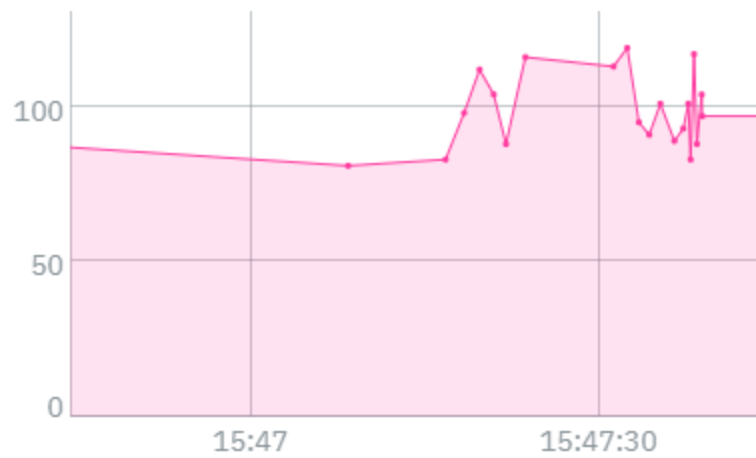
Event	Value	Format	Last Received
distance	{"distance":96}	json	a few seconds ago
distance	{"distance":91}	json	a few seconds ago
distance	{"distance":111}	json	a few seconds ago
distance	{"distance":83}	json	a few seconds ago
distance	{"distance":119}	json	a few seconds ago



ASSIGNMENT -4



Line chart



1 minute ▾

now

● distance