

Assignment -4
Wokwi & IBM Cloud

Assignment Date	28 October 2022
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Student Roll Number	732219CS104
Maximum Marks	2 Marks

Question-1:

Write code and connections in wokwi for ultrasonic sensor. Whenever the distance is less than 100 cms sent "alert" to ibm cloud and display in device recent events.

Solution:

Code:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "86u1b5"
#define DEVICE_TYPE "childsafety104"
#define DEVICE_ID "device104"
#define TOKEN "01234567"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/manimd/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 += "\"}";

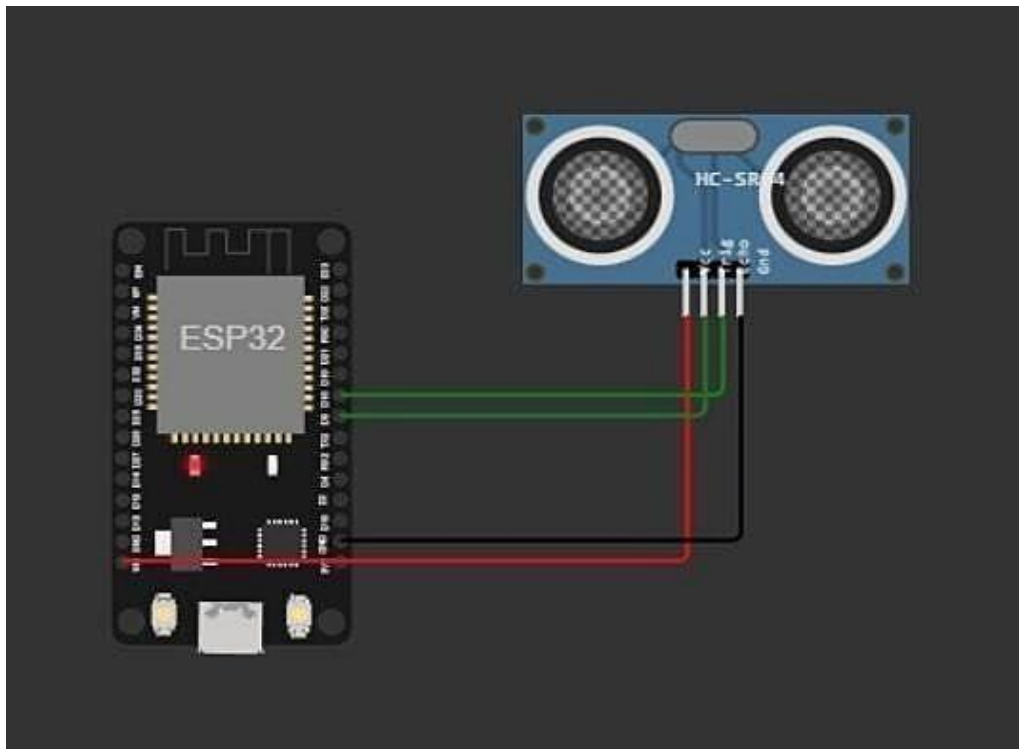
    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);
    if(client.publish(publishTopic, (char*) payload.c_str())) {
        Serial.println("Publish OK");
    }else {
        Serial.println("Publish FAILED");
    }
}

}

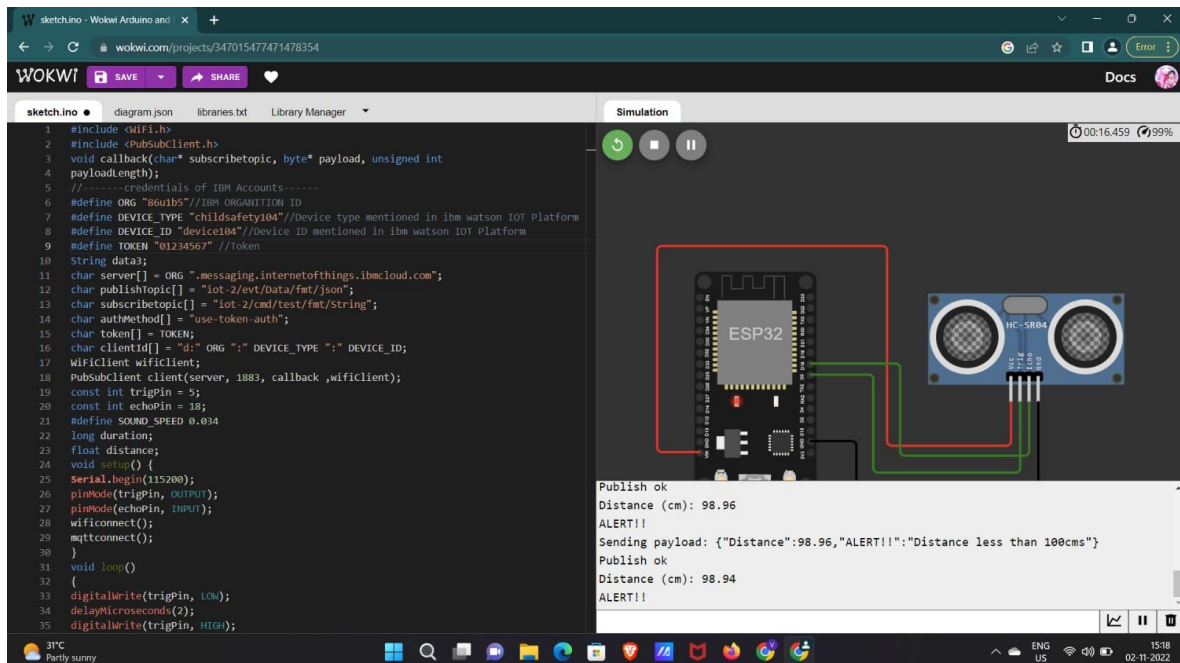
}

```

Connections:



Output:(wokwi):



Link: <https://wokwi.com/projects/347208356403872340>

Output:(IBM Cloud)

Service Details - IBM Cloud | IBM Watson IoT Platform | sketchino - Wokwi Arduino and | +

86u1b5.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform

86u1b5.internetofthings.ibmcloud.com/dashboard/devices/browse

device104 Connected child safety104 Device Nov 1, 2022 10:22 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
Data	{"Distance":98.94,"ALERT!!":"Distance less than ...	json	a few seconds ago
Data	{"Distance":98.94,"ALERT!!":"Distance less than ...	json	a few seconds ago
Data	{"Distance":98.96,"ALERT!!":"Distance less than ...	json	a few seconds ago
Data	{"Distance":98.94,"ALERT!!":"Distance less than ...	json	a few seconds ago
Data	{"Distance":98.94,"ALERT!!":"Distance less than ...	json	a few seconds ago

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31°C Partly sunny 15:18 02-11-2022