

Assignment -4
Wowki & IBM Cloud

Ques on-1:

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

Solu on:

Code:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define org "1hjj6h"
#define devicetype "abdur9489"
#define deviceid "distance_alert"
#define authToken "QABc-&&E&3H-AJH3EB"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/abdurrahman/fmt/json";
char topic[] = "iot-2/cmd/led/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" org ":" devicetype ":" deviceid;
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");
}
}

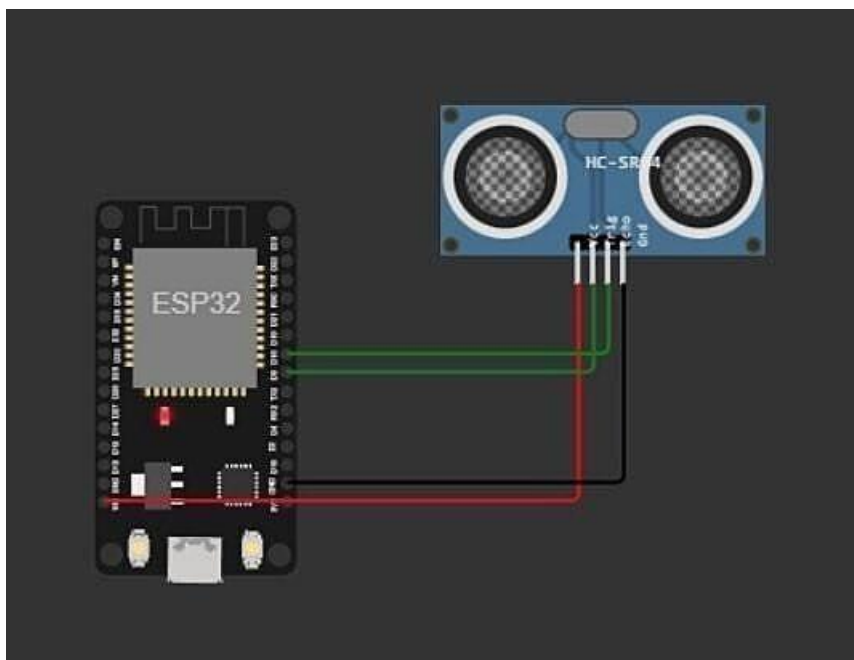
if(dist>100){
String payload = "{\\"Distance\":";
payload += dist;
payload += "}";

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");
}
}

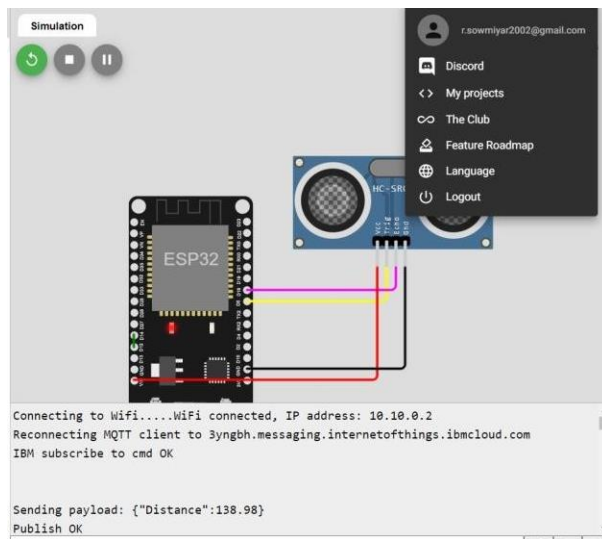
}

```

Connections:



Output:(wowki)



Link: <https://wokwi.com/projects/346917907146474068>

Output:(IBM Cloud)

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
12345	Connected	NodeMCU	Device	Oct 17, 2022 2:36 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	{\"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		