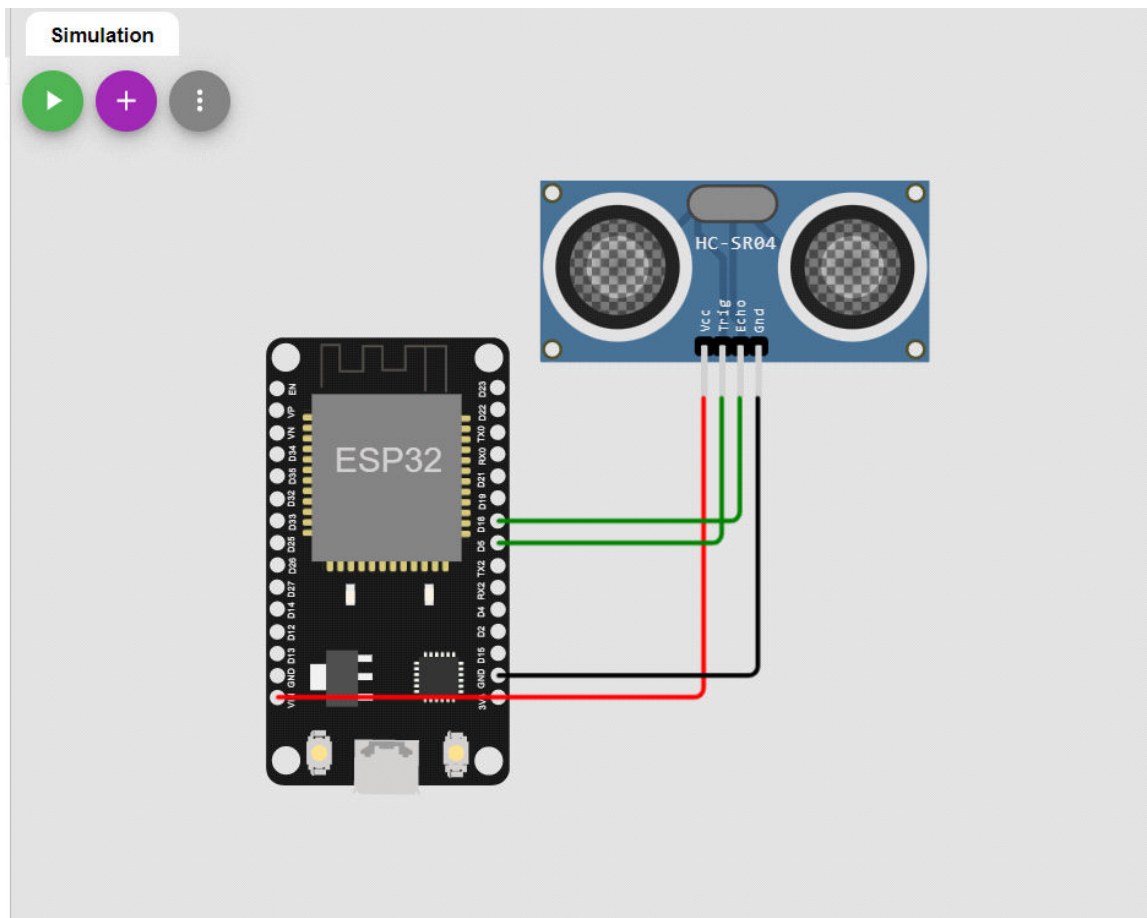


Assignment -4

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

Circuit Diagram:



Code:

```
#include <WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;

String data3;

#define ORG "droyd2"

#define DEVICE_TYPE "surekhasks"

#define DEVICE_ID "9344706"

#define TOKEN "HfLa_E+N*t4)nxBx+I"

#define speed 0.034

#define led 14

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";

char publishTopic[] = "iot-2/evt/Surekha S.K/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 += "\"}";
    }

```

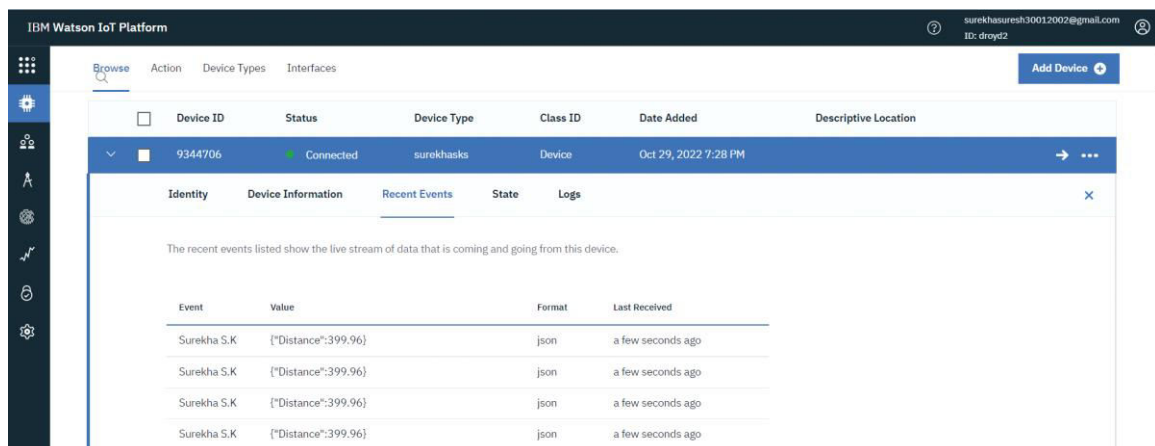
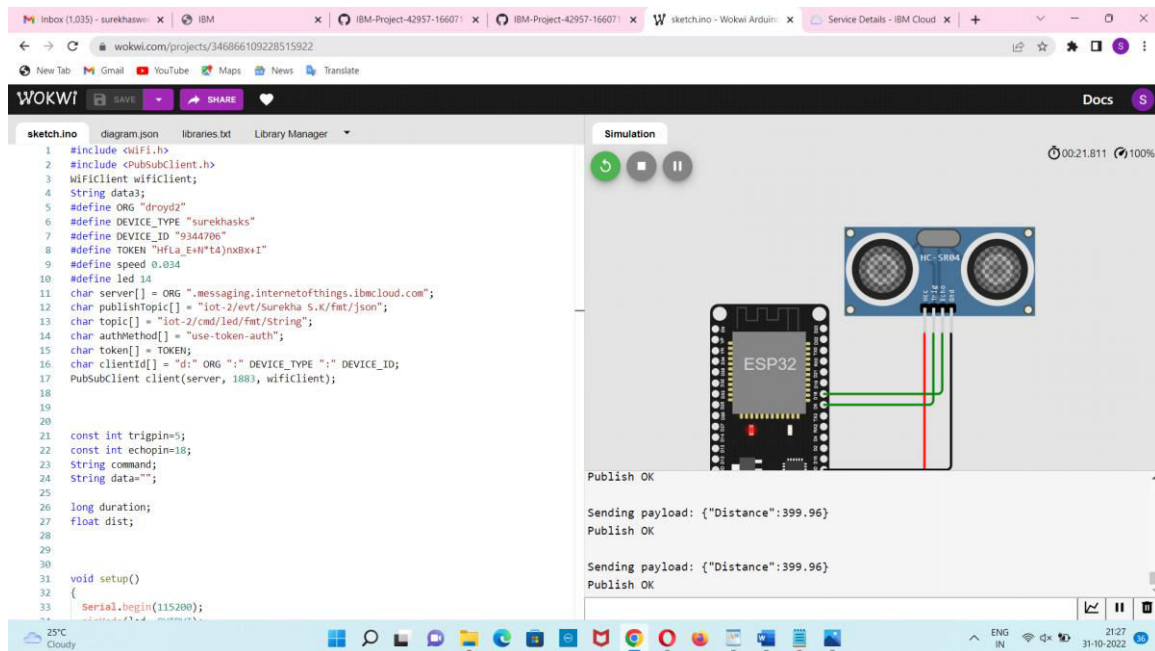
```
Serial.print("\n");  
Serial.print("Sending payload: ");  
Serial.println(payload);  
if(client.publish(publishTopic, (char*) payload.c_str())) {  
    Serial.println("Publish OK");  
}else {  
    Serial.println("Publish FAILED");  
}  
}  
}  
}
```

Wowki Stimulation Link :

<https://wokwi.com/projects/346866109228515922>

Output:

i) When the distance is greater than 100 cms



ii) When the distance is less than 100 cms

WOKWIT

sketch.ino diagram.json libraries.txt Library Manager

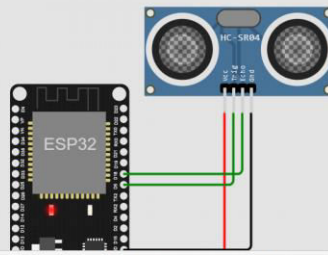
```

1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wificlient;
4 String data3;
5 #define ORG "droyd2"
6 #define DEVICE_TYPE "surekhasks"
7 #define DEVICE_ID "9344706"
8 #define TOKEN "Hfla_E+Htt4)nxBx+I"
9 #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/Surekha S.K/fmt/json";
13 char topic[] = "iot-2/cmd/led/fmt/String";
14 char authMethod[] = "use-token-auth";
15 char token[] = TOKEN;
16 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
17 PubSubClient client(server, 1883, wificlient);
18
19
20
21 const int trigpin=5;
22 const int echopin=18;
23 String command;
24 String data="";
25
26 long duration;
27 float dist;
28
29
30
31 void setup()
32 {
33   Serial.begin(115200);

```

Simulation

00:27.325 97%



Connecting to Wifi...WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to droyd2.messaging.internetofthings.ibmcloud.com
IBM subscribe to cmd OK

Sending payload: {"Alert Distance":50}
Publish OK

25°C Cloudy

IBM Watson IoT Platform

surekhasuresh30012002@gmail.com
ID: droyd2

Browse Action Device Types Interfaces

Search by Device ID

Device Simulator

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
9344706	Connected	surekhasks	Device	Oct 29, 2022 7:28 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
Surekha S.K	{"Distance":399.96}	json	a few seconds ago
Surekha S.K	{"Alert Distance":50}	json	a few seconds ago
Surekha S.K	{"Distance":399.96}	json	a few secor

1 Simulation running

25°C Cloudy

