

## Assignment -4

Assignment Date	2 November 2022
Student Name	Abirami S
Student Roll Number	513419106002
Maximum Marks	2 Marks

### Question-1

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.

Upload document with wokwi share link and images of IBM cloud.

### Solution

The screenshot displays the Wokwi IDE interface. On the left, the 'sketch.ino' file is open, showing the following code:

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wifiClient;
4 String data;
5 #define ORG "zpw049"
6 #define DEVICE_TYPE "esp"
7 #define DEVICE_ID "esp_23"
8 #define TOKEN "3kXKf1gInC7lh7bS95"
9 #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/Data/fmt/json";
13 char topic[] = "iot-2/cmd/home/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 void publishData();
19
20
21 const int trigpin=33;
22 const int echopin=32;
23 String command;
24 String data="";
25
26 long duration;
27 float dist;
28
29
30 void setup()
31 {
32   Serial.begin(115200);
33   pinMode(led, OUTPUT);
34   pinMode(trigpin, OUTPUT);
35 }
```

On the right, the 'Simulation' window shows a visual representation of the circuit. An HC-SR04 ultrasonic sensor is connected to an ESP32 microcontroller. The sensor's VCC pin is connected to the ESP32's 5V pin, and its GND pin is connected to the ESP32's GND pin. The trigpin (pin 33) is connected to the sensor's Trig pin, and the echopin (pin 32) is connected to the sensor's Echo pin. The simulation shows the sensor's distance reading as 57cm. Below the simulation, the console output shows the following messages:

```
Sending payload: {"Normal Distance":56.97}
Publish OK
Sending payload: {"Normal Distance":56.97}
Publish OK
Reconnecting MQTT client to zpw049.messaging.internetofthings.ibmcloud.com
```

**Reference:**

[https://wokwi.com/projects/3](https://wokwi.com/projects/347740680995471955)

47740680995471955