

## Assignment 4

### wokwi for the ultrasonic sensor.

Assignment Date	29 OCT 2022
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Student Roll Num	210619106030
Maximum Marks	2 Marks

#### QUESTION 1

**Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cms send "alert " to ibm cloud and display in device recent events. Upload document with wokwi share link and image of ibm cloud**

#### Code:

```
#include "WiFi.h"

#include "Wifclient.h"

#define DEVICE_TYPE "ESP32_controller"

#define DEVICE_ID "Assignment_4"

#define TOKEN "&S?LQdLRzh3n2gkyDt" char

server[] = "ORG".meassaging.internertofthings.ibmcloud.com"; char

pubTopic1[] = "iot-2/evt/status1/fmt/json"; char

authMethod[] = "use-token-auth"; char token[] = TOKEN; char

clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID; long

now; wifclient wifclient; pubsubclient client(server, 1883,

NULL, wifclient);

#define echoPin 2 // attach pin D2 Arduino to pin Echo of HC-SR04

#define trigPin 3 //attach pin D3 Arduino to pin Trig of HC-SR04
```

```

// defines variables long duration; // variable for the duration
of sound wave travel int distance; // variable for the distance
measurement

void setup() { pinMode(trigPin, OUTPUT); // Sets the trigPin
as an OUTPUT pinMode(echoPin, INPUT); // Sets the echoPin
as an INPUT

Serial.begin(9600); // // Serial Communication is starting with 9600 of baudrate speed
Serial.println("Ultrasonic Sensor HC-SR04 Test"); // print some text in Serial Monitor
Serial.println("with Arduino UNO R3");
} void loop()
{
    // Clears the trigPin condition
    digitalWrite(trigPin, LOW);
    delayMicroseconds(2);

    // Sets the trigPin HIGH (ACTIVE) for 10 microseconds
    digitalWrite(trigPin, HIGH); delayMicroseconds(10);
    digitalWrite(trigPin, LOW);

    // Reads the echoPin, returns the sound wave travel time in microseconds duration
    = pulseIn(echoPin, HIGH); // Calculating the distance distance = duration * 0.034
/ 2; // Speed of sound wave divided by 2 (go and back)

    // Displays the distance on the Serial Monitor
    Serial.print("Distance: ");

    Serial.print(distance); Serial.println(" cm"); delay(500);

    if(distance<=100) { string payload
    ="{"d\":{"Name\":" DEVICE_ID\"; payload +=

```

```

",\"Distance\":";    payload += distance;    payload +=
"}}";

    Serial.print("sending payload: ")

Serial.println(payload);    if (client.publish(pubTopic1,
(char*) payload.c_str()))

{

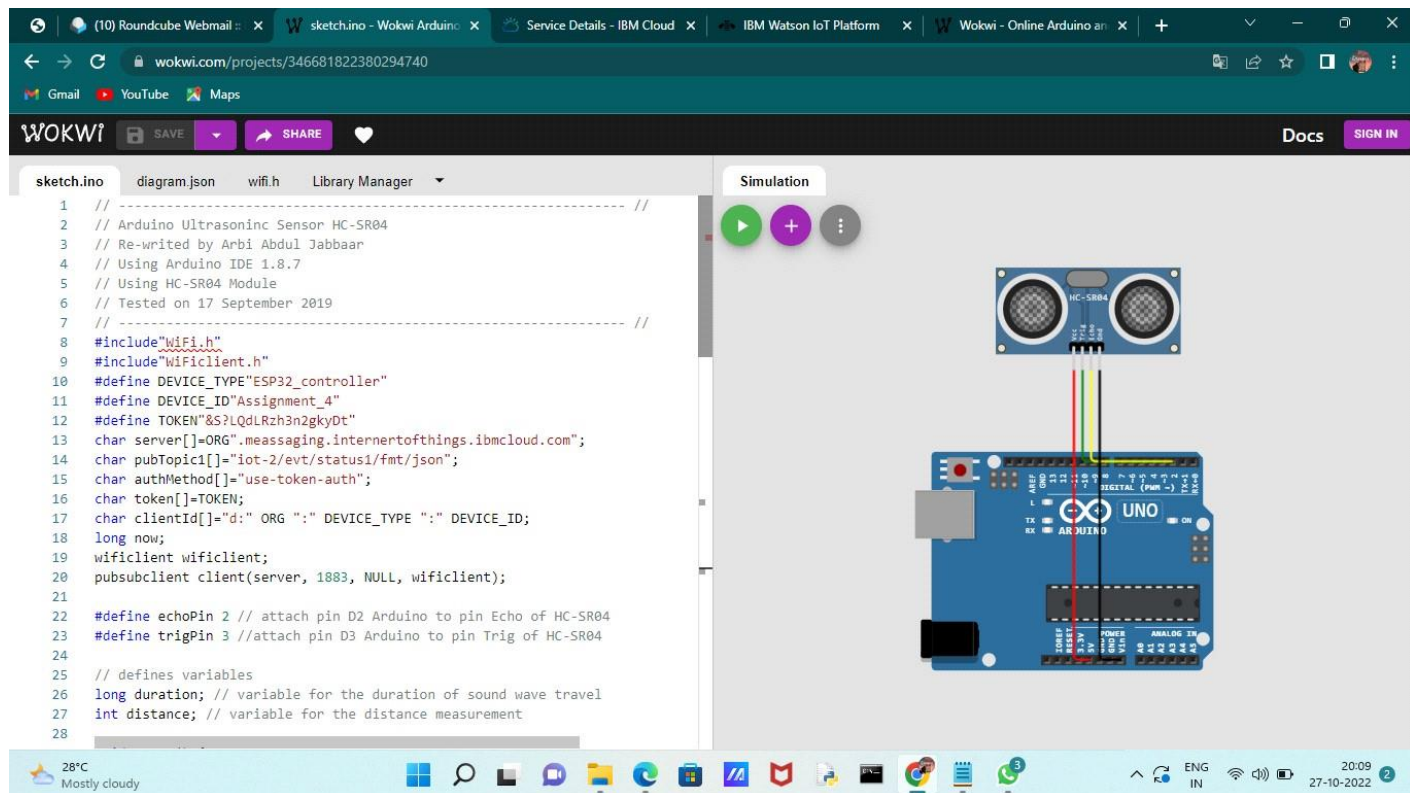
    Serial.print("***ALERT***");

}

}

}

```

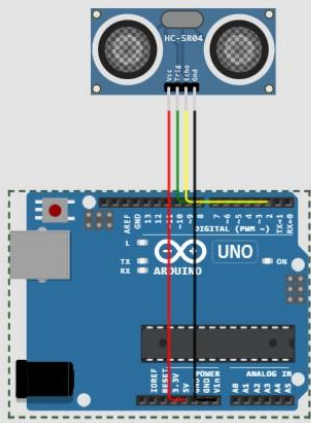


WOKWI

sketch.ino diagram.json wifi.h Library Manager

```
41 digitalWrite(trigPin, HIGH);
42 delayMicroseconds(10);
43 digitalWrite(trigPin, LOW);
44 // Reads the echoPin, returns the sound wave travel time in microseconds
45 duration = pulseIn(echoPin, HIGH);
46 // Calculating the distance
47 distance = duration * 0.034 / 2; // Speed of sound wave divided by 2 (go and
48 // Displays the distance on the Serial Monitor
49 Serial.print("Distance: ");
50 Serial.print(distance);
51 Serial.println(" cm");
52 delay(500);
53 if(distance<=100)
54 {
55   string payload = "{\"d\":{\"Name\":\"\" DEVICE_ID\"\"";
56   payload += "\",\"Distance\":";
57   payload += distance;
58   payload += "\"}";
59   Serial.print("sending payload: ")
60   Serial.println(payload);
61   if (client.publish(pubTopic1, (char*) payload.c_str()))
62   {
63     Serial.print("****ALERT****");
64   }
65 }
66 }
67
68 }
```

Simulation



28°C Mostly cloudy

ENG IN 20:11 27-10-2022

WOKWI

sketch.ino diagram.json Library Manager

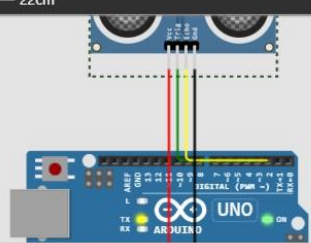
```
7 // ----- //
8
9 #define echoPin 2 // attach pin D2 Arduino to pin Echo of HC-SR04
10 #define trigPin 3 //attach pin D3 Arduino to pin Trig of HC-SR04
11
12 // defines variables
13 long duration; // variable for the duration of sound wave travel
14 int distance; // variable for the distance measurement
15
16 void setup() {
17   pinMode(trigPin, OUTPUT); // Sets the trigPin as an OUTPUT
18   pinMode(echoPin, INPUT); // Sets the echoPin as an INPUT
19   Serial.begin(9600); // // Serial Communication is starting with 9600 of baud
20   Serial.println("Ultrasonic Sensor HC-SR04 Test"); // print some text in Seri
21   Serial.println("with Arduino UNO R3");
22 }
23
24 void loop() {
25   // Clears the trigPin condition
26   digitalWrite(trigPin, LOW);
27   delayMicroseconds(2);
28   // Sets the trigPin HIGH (ACTIVE) for 10 microseconds
29   digitalWrite(trigPin, HIGH);
30   delayMicroseconds(10);
31   digitalWrite(trigPin, LOW);
32   // Reads the echoPin, returns the sound wave travel time in microseconds
33   duration = pulseIn(echoPin, HIGH);
34   // Calculating the distance
35   distance = duration * 0.034 / 2; // Speed of sound wave divided by 2 (go and
```

Simulation

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Editing Ultrasonic Distance Sensor

Distance: 22cm



\*\*\*ALERT\*\*\*Distance: 21 cm

\*\*\*ALERT\*\*\*Distance: 21 cm

\*\*\*ALERT\*\*\*Distance: 21 cm

\*\*\*ALERT\*\*\*Distance: 21 cm

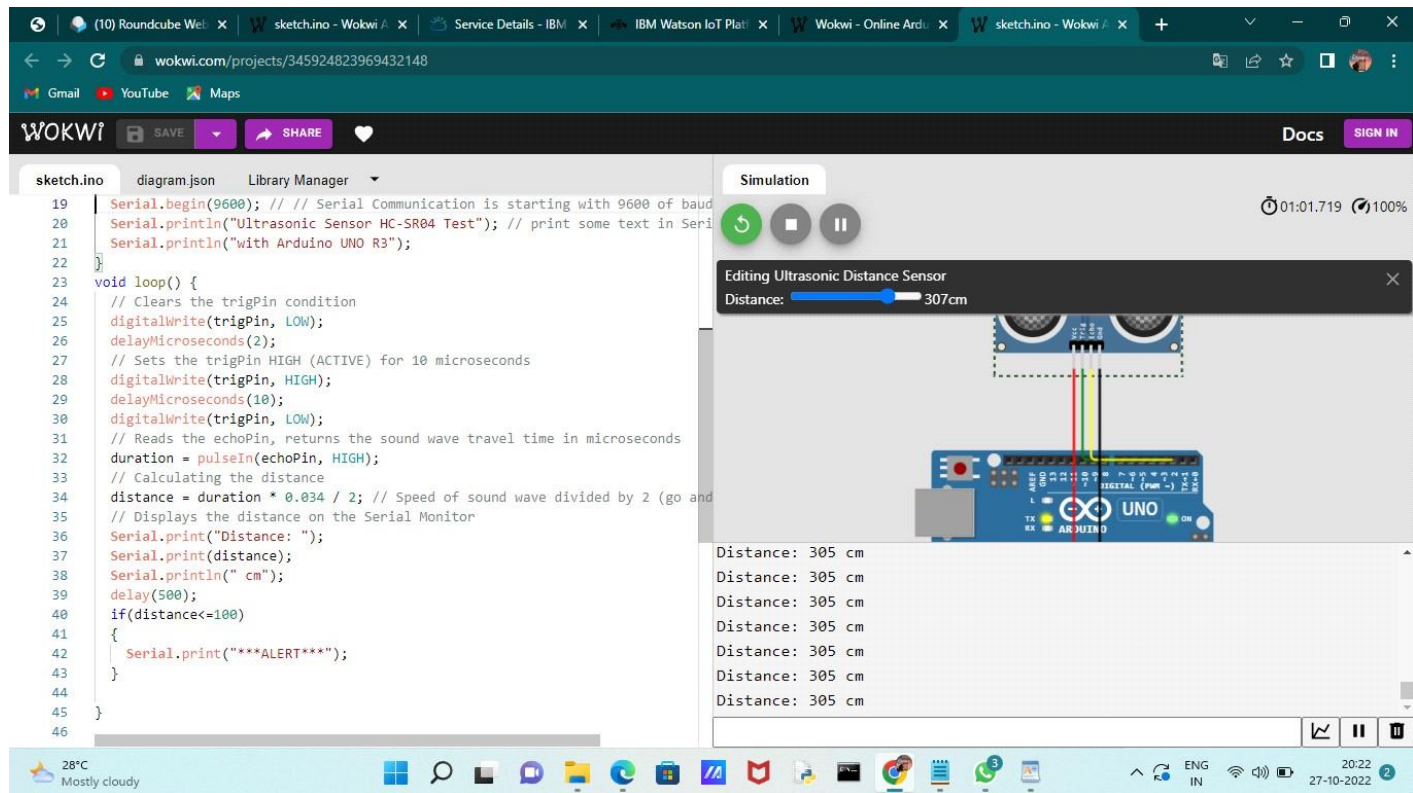
\*\*\*ALERT\*\*\*Distance: 21 cm

\*\*\*ALERT\*\*\*Distance: 21 cm

\*\*\*ALERT\*\*\*Distance: 21 cm

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## OUTPUT:

Distance: 305 cm

Distance: 40 cm

\*\*\*ALERT\*\*\*Distance: 40 cm