Assignment 4

wokwi for the ultrasonic sensor.

Assignment Date	29 OCT 2022
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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"WiFiclient.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; wificlient wificlient; pubsubclient client(server, 1883,

NULL, wificlient);


#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
```

```cpp
// 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: ")

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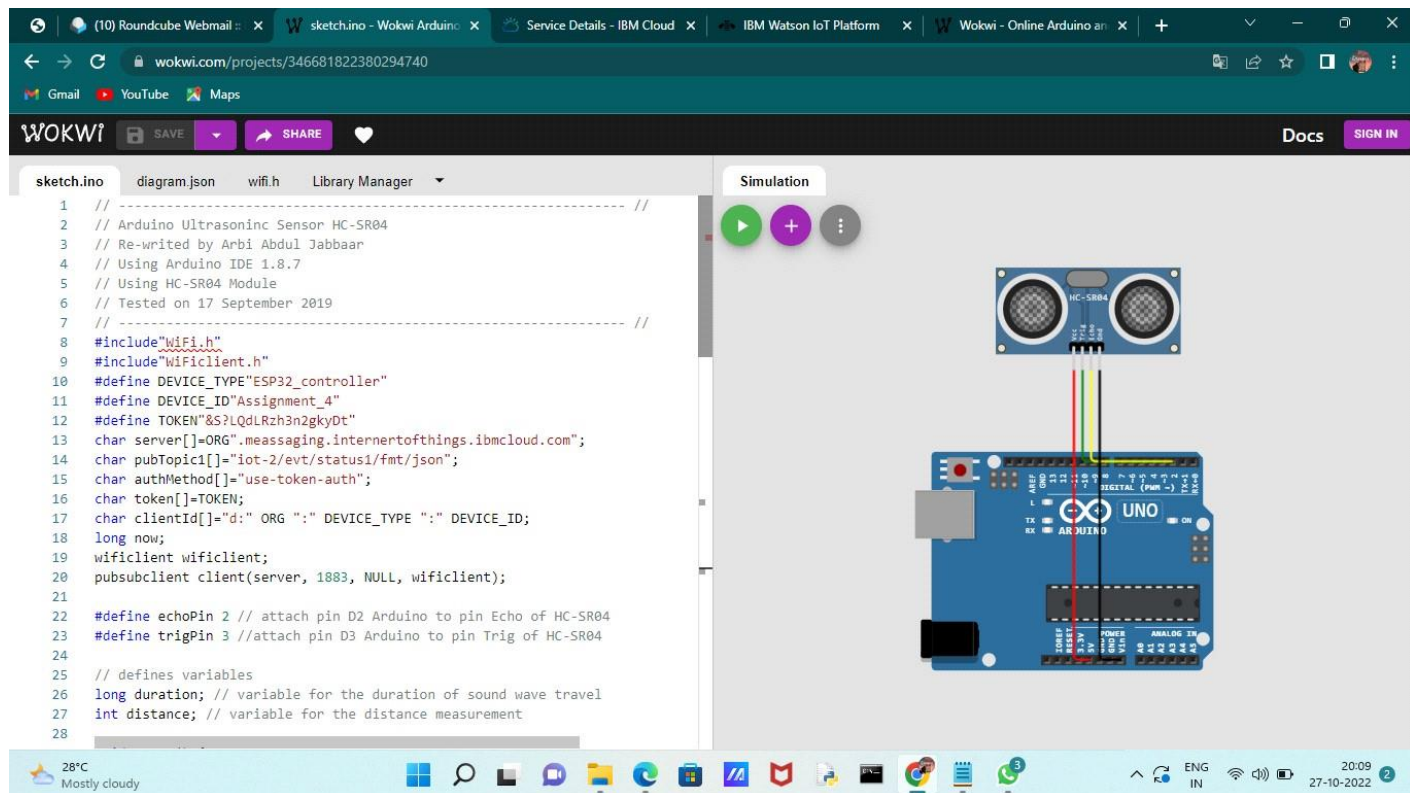
(char*) payload.c_str()))

   {

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

   }

}

}

First Wokwi editor (project 346681822380294740), sketch.ino:

```
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      Seerial.println(payload);
61      if (client.publish(pubTopic1, (char*) payload.c_str()))
62      {
63          Serial.print("***ALERT***");
64      }
65
66    }
67
68  }
```


Second Wokwi editor (project 345924823969432148), sketch.ino:

```
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    void loop() {
24      // Clears the trigPin condition
25      digitalWrite(trigPin, LOW);
26      delayMicroseconds(2);
27      // Sets the trigPin HIGH (ACTIVE) for 10 microseconds
28      digitalWrite(trigPin, HIGH);
29      delayMicroseconds(10);
30      digitalWrite(trigPin, LOW);
31      // Reads the echoPin, returns the sound wave travel time in microseconds
32      duration = pulseIn(echoPin, HIGH);
33      // Calculating the distance
34      distance = duration * 0.034 / 2; // Speed of sound wave divided by 2 (go and
```

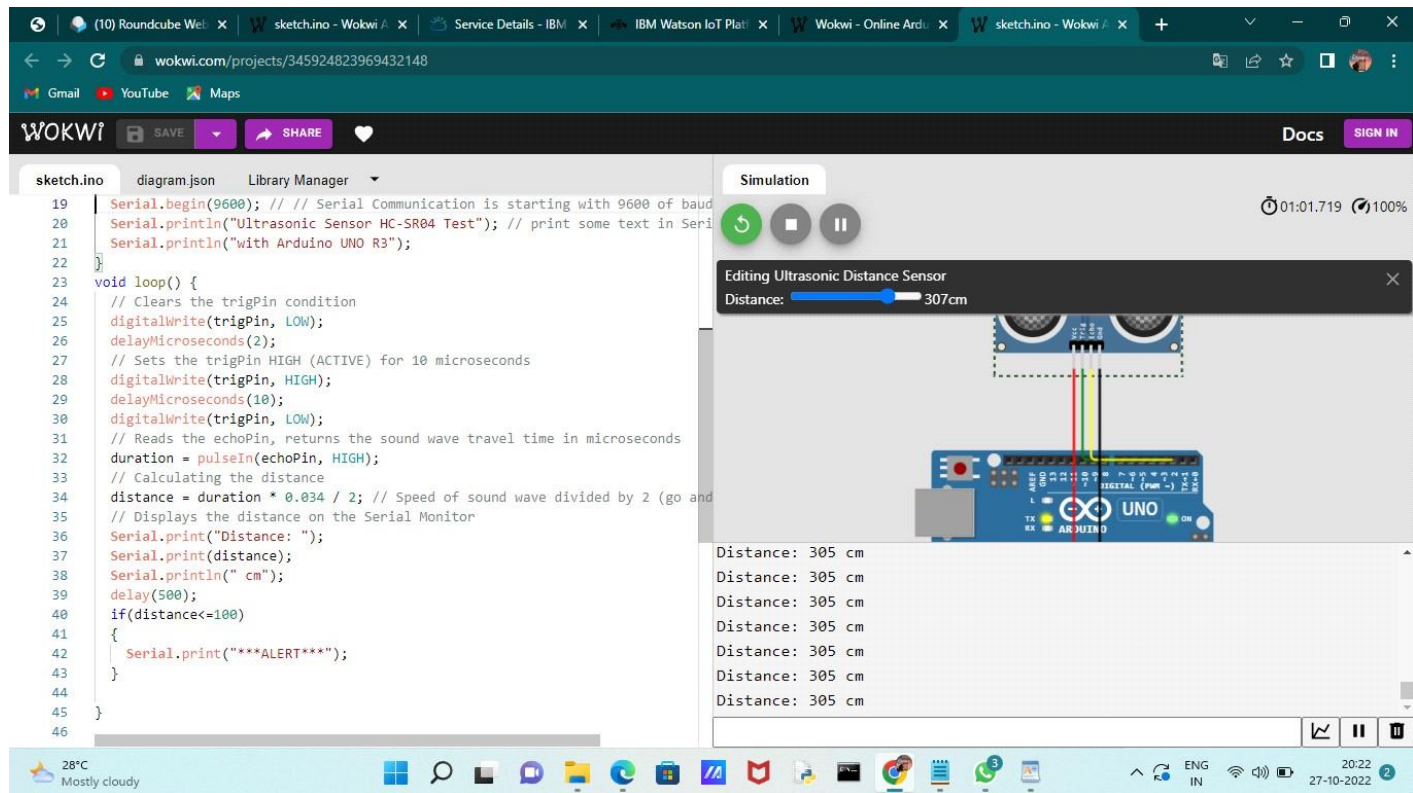Editing Ultrasonic Distance Sensor — Distance: 22cm

Serial monitor:
```
***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
```

OUTPUT:

Distance: 305 cm

Distance: 40 cm

ALERTDistance: 40 cm