

## Assignment -4

Assignment Date	25 October 2022
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### Question-1:

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cmsend “alert” to ibm cloud and display in device recent events.

### Code :

```
#include <WiFi.h>
#include
<PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG ""
#define DEVICE_TYPE
"Distance" #define DEVICE_ID
"Ultrasonic" #define TOKEN
"WD6Mb(-d2F+X0xWqnB"
#define speed 0.034
#define led 14
char server[] = ORG
".messaging.internetofthings.ibmcloud.com";char
publishTopic[] = "iot-2/evt/event2/fmt/json";
char topic[] = "iot-2/cmd/home/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!! 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 += "}";

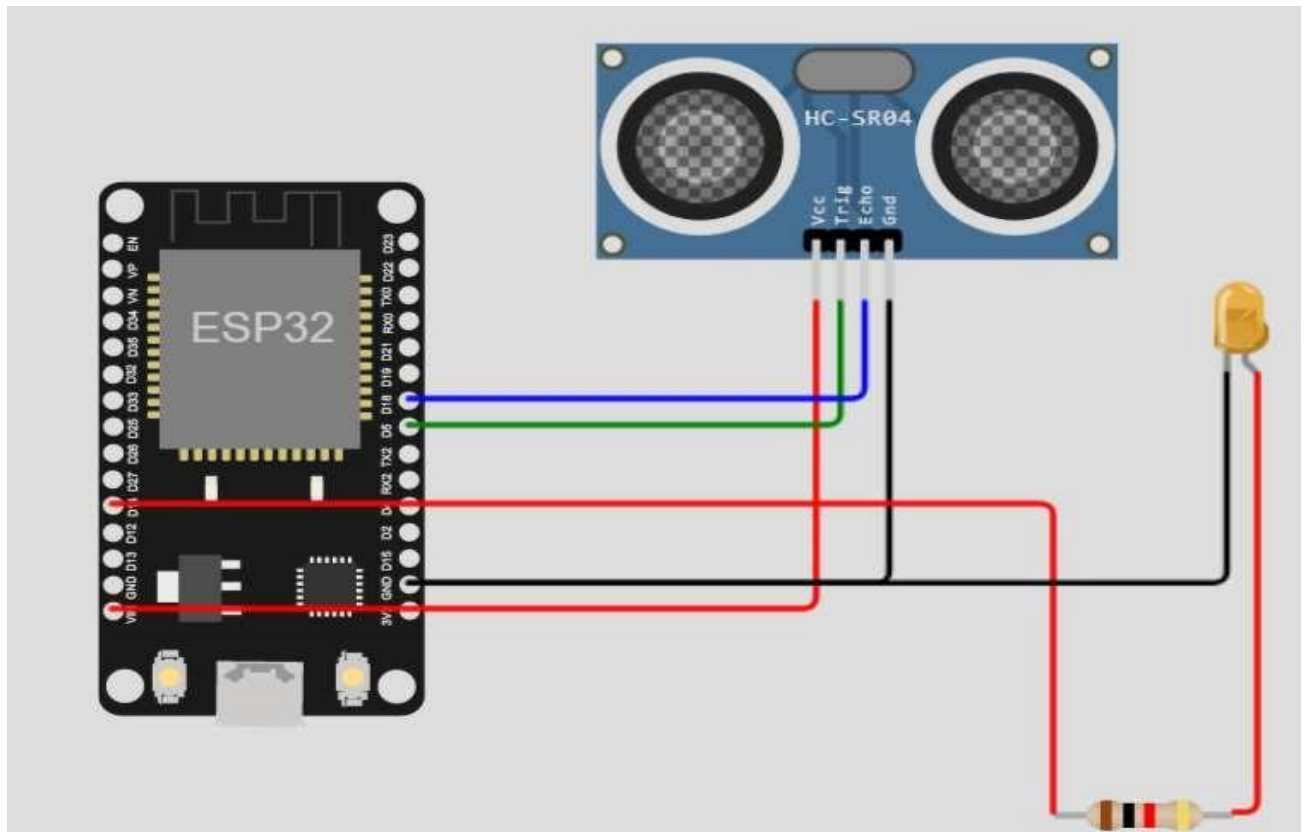
        Serial.print("\n");
        Serial.print("Sending payload: ");
        Serial.println(payload);
        if(client.publish(publishTopic, (char*) payload.c_str())) {
            Serial.println("Publish OK");
        }else {
            Serial.println("Publish FAILED");
        }

    }

}

```

## Connections:



## WOKWI AND IBM CLOUD CONNECTED:

IBM Watson IoT Platform

sketch.ino - Wokwi Arduino and | x | +

iiigje.internetofthings.ibmcloud.com/dashboard/devices/browse

Gmail New Tab YouTube Maps Translate

713319it017@smartinternz.com ID: iiigje

IBM Watson IoT Platform

Browse Action Device Types Interfaces

All Devices Diagnose

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID

Device Simulator

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added
>	<input type="checkbox"/> Ultrasonic	Disconnected	Distance	Device	Nov 1, 2022 11:09 AM

Items per page 50 | 1-1 of 1 item

1 of 1 page

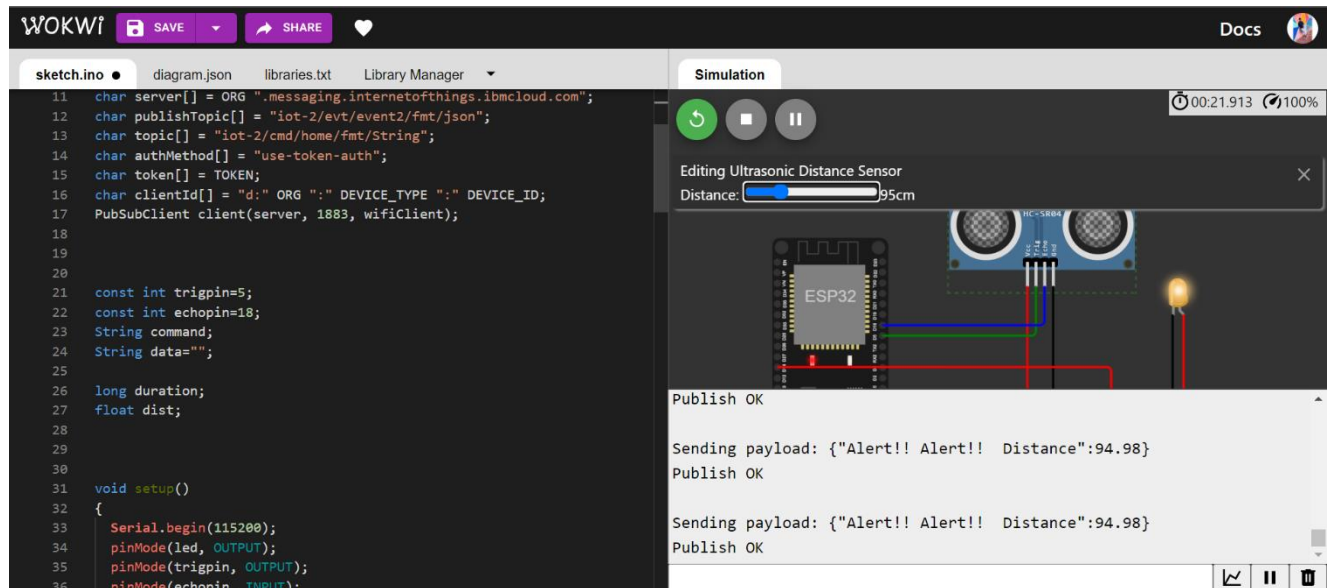
11:38 AM 11/1/2022

## OUTPUT:

1. Distance = 95 cm

Status = Alert

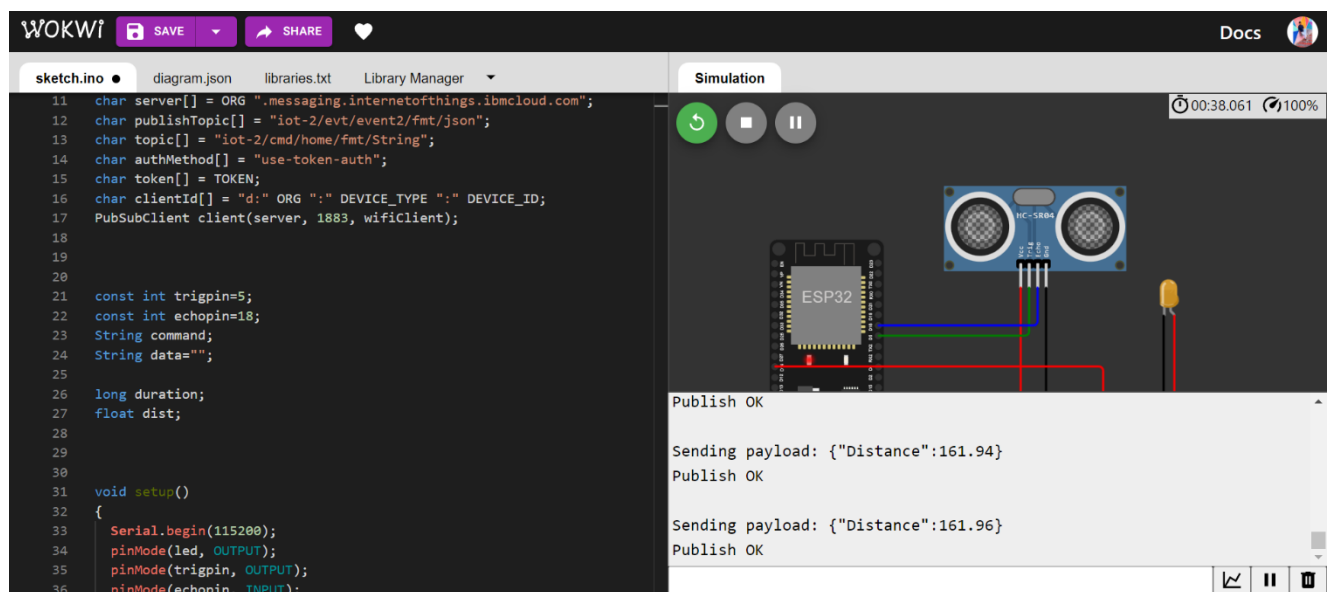
Message



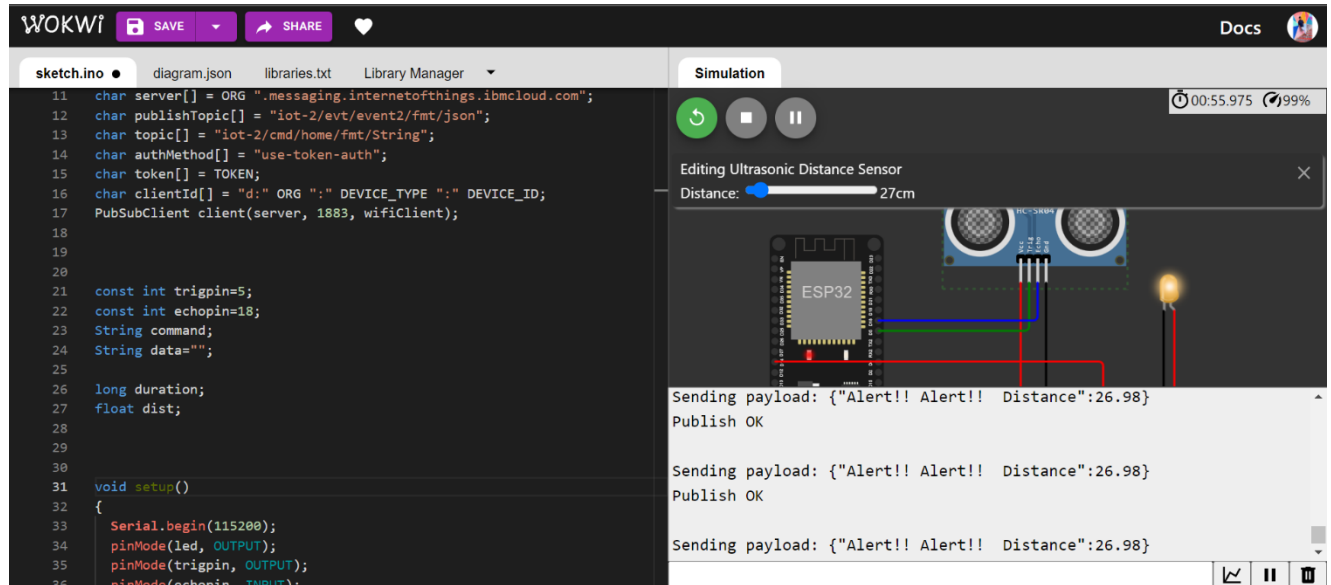
2. Distance =

162 cm

Status = Normal



**3. Distance = 27 cm**  
**Status = Alert**  
**Message**



**Reference link = <https://wokwi.com/projects/347107058566300242>**



