

**Assignment -4**  
**WOWKI SIMULATION**

Assignment Date	4th NOVEMBER 2022
Student Name	ABARNAA VS
Student Roll Number	960219106002
Maximum Marks	2 Marks

**Question-1:**

Write a code and make a connection in WOKWI for ultrasonic sensor. Whenever distance is less than 100 , send “alert” to IBM cloud and display in device recent events.

**PROGRAM**

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient;
String data3;
#define ORG "2t8zs3"
#define DEVICE_TYPE "b11m3e-device" #define
DEVICE_ID "11111111deviceid"
#define TOKEN "2*kzBuumHxd+BeL*H)"
#define speed 0.034 #define led 14 char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[] =
"iot-2/evt/Amrin/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");
    }

  }

}

```

**OUTPUT:**

**WOKWI SIMULATION**

Service Details - IBM Cloud | IBM Watson IoT Platform | sketch.ino copy - Wokwi Arduino | wokwi.com/projects/347465821121938004

WOKWI SAVE SHARE sketch.ino copy Docs

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 "45ko5e"
6 #define DEVICE_TYPE "b11m3edevicetype"
7 #define DEVICE_ID "b11m3device"
8 #define TOKEN "@Ay4a1qh2J(JqUWU*E"
9 #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.co
12 char publishTopic[] = "iot-2/evt/Abarnaa/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 const int trigpin=5;
21 const int echopin=18;
22 String command;
```

Simulation 01:23.654 78%

ESP32 HC-SR04

Publish OK

Sending payload: {"Distance":399.96}  
Publish OK

Sending payload: {"Distance":399.92}  
Publish OK

7:18 PM 11/5/2022

When distance<100:

Simulation 00:09.931 66%

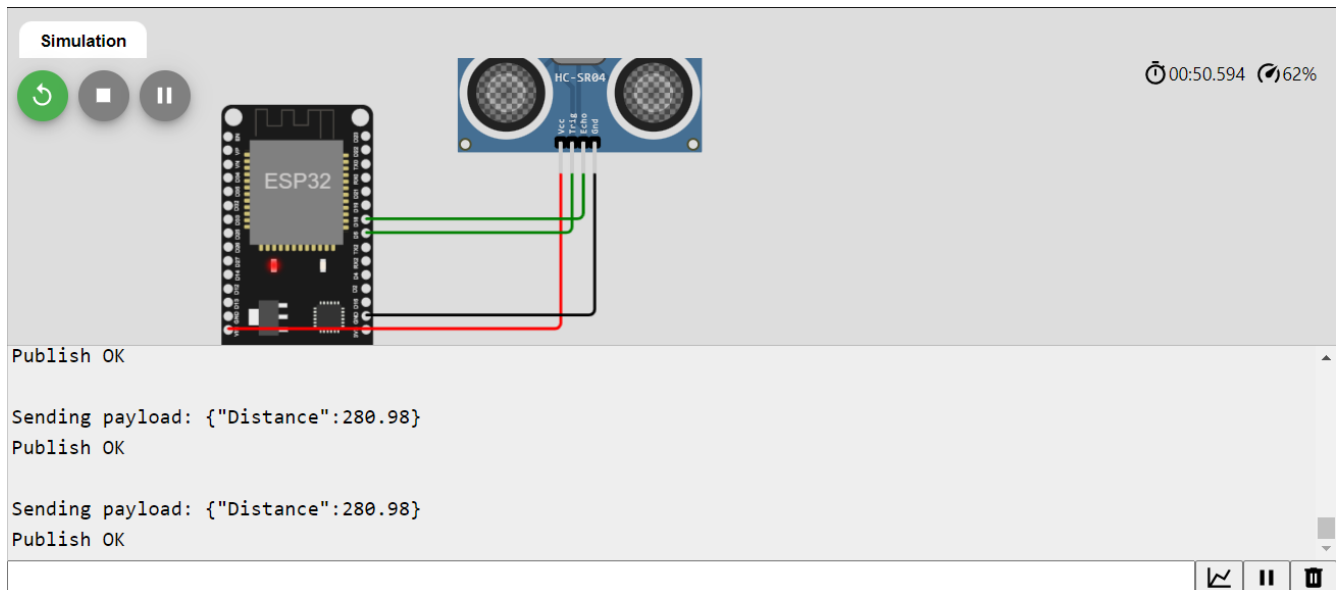
ESP32 HC-SR04

Publish OK

Sending payload: {"Alert Distance":65.98}  
Publish OK

Sending payload: {"Alert Distance":65.98}  
Publish OK

When distance>100:



## IBM CLOUD OUTPUT

The screenshot displays the IBM Watson IoT Platform dashboard. The top navigation bar includes 'Service Details - IBM Cloud' and 'IBM Watson IoT Platform'. The main header shows the user '960219106002@smartinternz.com' with ID '45ko5e'. The left sidebar contains various icons for navigation. The main content area is titled 'Browse' and shows details for a device named 'Abarnaa'. The 'Recent Events' tab is selected, displaying a table of events.

Event	Value	Format	Last Received
Abarnaa	{"Alert distance":68}	json	5 minutes ago
Abarnaa	{"Alert distance":91}	json	5 minutes ago
Abarnaa	{"Alert distance":15}	json	5 minutes ago
Abarnaa	{"Alert distar		

Below the table, it indicates '1 Simulation running'.

**WOKWI LINK:**

<https://wokwi.com/projects/347465821121938004>