

Assignment -4
WOWKI SIMULATION

Assignment Date	2 nd NOVEMBER 2022
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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 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");
        }

    }

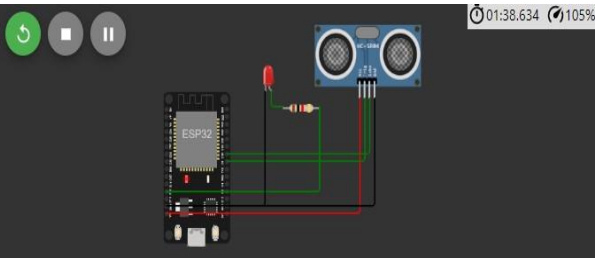
}
}

```

OUTPUT:

WOKWI SIMULATION

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wifiClient;
4 String data3;
5 #define ORG "2t8zs3"
6 #define DEVICE_TYPE "b1m3e-device"
7 #define DEVICE_ID "11111111deviceid"
8 #define TOKEN "2*kzBuumHxd+BeL*H)"
9 #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/Amrin/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;
23 String data="";
24
25 long duration;
26 float dist;
27
28
```



Sending payload: {"Alert Distance":36.94}
Publish OK

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Publish OK

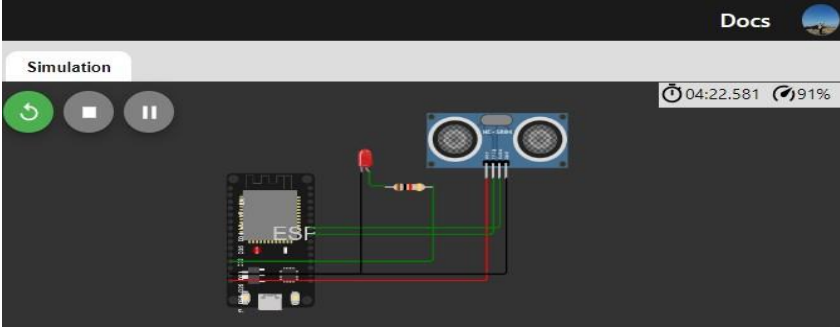
Sending payload: {"Alert Distance":36.94}
Publish OK

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Publish OK

When distance<100:

Docs

Simulation



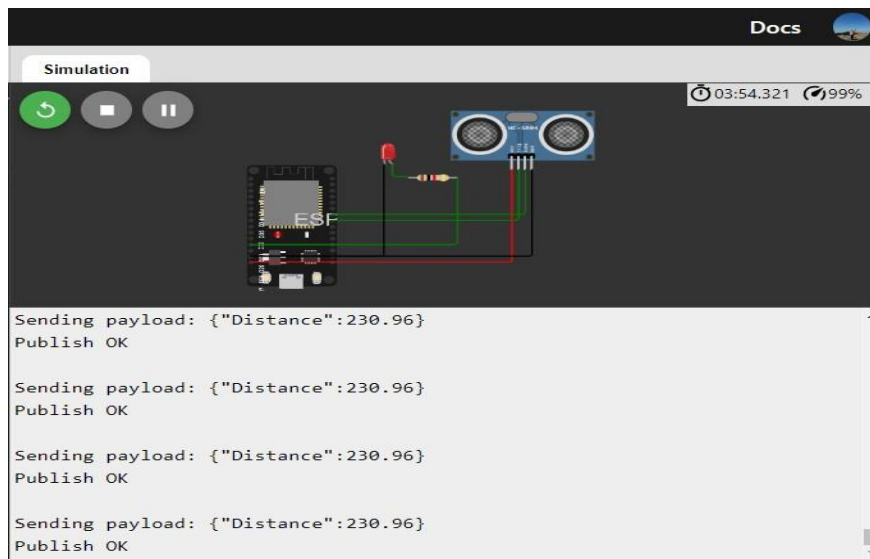
Sending payload: {"Alert Distance":65.98}
Publish OK

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

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

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

When distance>100:



IBM CLOUD OUTPUT

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By	Device Class
▼	11111111deviceid	Disconnected	b11m3e-device	Device	Oct 10, 2022 9:48 AM		960219106020@smartinternz.com	→ ...
Identity Device Information Recent Events State Logs								
The recent events listed show the live stream of data that is coming and going from this device.								
Event	Value	Format	Last Received					
Amrin	{"Alert Distance":33.97}	json	a few seconds ago					
Amrin	{"Alert Distance":33.97}	json	a few seconds ago					
Amrin	{"Alert Distance":33.97}	json	a few seconds ago					
Amrin	{"Alert Distance":33.97}	json	a few seconds ago					
Amrin	{"Alert Distance":33.97}	json	a few seconds ago					

WOKWI LINK:

<https://wokwi.com/projects/347264373844083284>