

#### Assignment -4

Assignment Date	19 September 2022
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Maximum Marks	2 Marks

#### Question-1:

Write code and connections in wokwi for the ultrasonic sensor.

Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events.

Upload document with wokwi share link and images of IBM cloud

**Wowki link:** <https://wokwi.com/projects/347280270780531283>

#### Program:

```
#include <WiFi.h>
```

```
#include <PubSubClient.h>
```

```
#include <ArduinoJson.h>
```

**WiFiClient wificlient:**

```
#define ORG "tubusr"
```

```
#define DEVICE_TYPE "Evangs151"
```

```
#define DEVICE_ID "trainingid"
```

```
#define TOKEN "vqHfrv0*Jf3RB5hcJ8"
```

```
#define speed 0.034
```

```
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
```

```
char publishTopic[] = "iot-2/evt/Data/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); void publishData();
```

```
const int trigpin=5; const  
int echopin=18; String  
command;
```

```
String data="";
```

```
long duration; int  
dist;
```

```
void setup()  
{  
  Serial.begin(115200);  
  pinMode(trigpin, OUTPUT);  
  pinMode(echopin, INPUT);  
  wifiConnect(); mqttConnect();  
}
```

```
void loop() {  
  
  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(1000);
}

initManagedDevice();

Serial.println();
}
}

void initManagedDevice() {
if (client.subscribe(topic)) {

Serial.println(client.subscribe(topic));
Serial.println("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){
```

```
    DynamicJsonDocument doc(1024);
```

```
    String payload;
```

```
    doc["AlertDistance:"]=dist;
```

```
    serializeJson(doc, payload);  delay(3000);
```

```
    Serial.print("\n");
```

```
    Serial.print("Sending payload: ");
```

```
    Serial.println(payload);
```

```
    if (client.publish(publishTopic, (char*) payload.c_str())) {
```

```
        Serial.println("Publish OK");
```

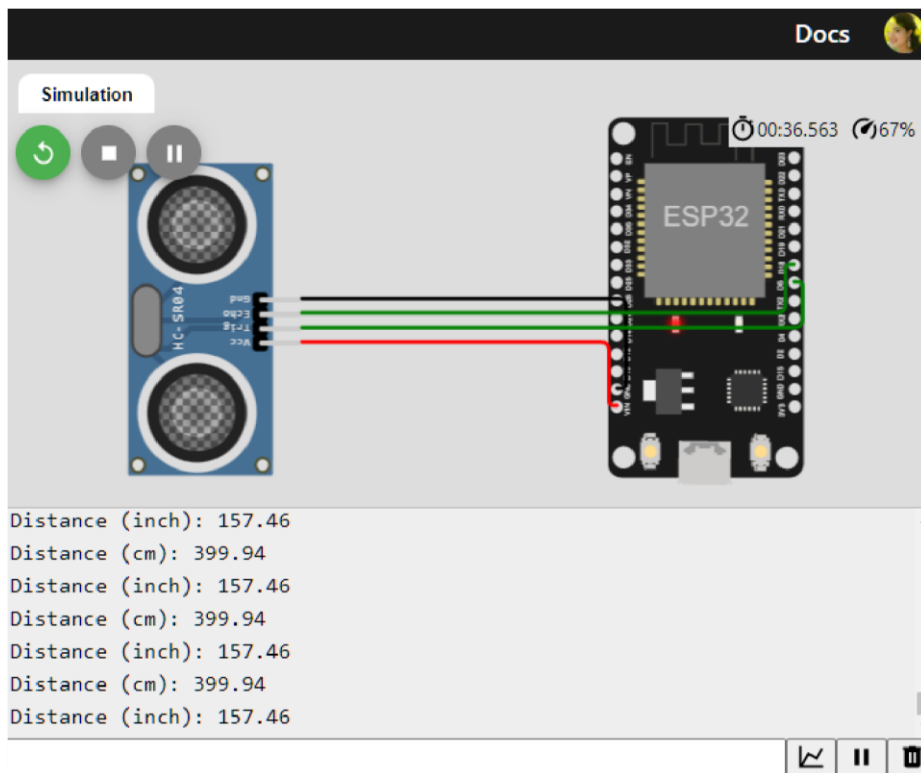
```
    } else {
```

```
        Serial.println("Publish FAILED");
```

```
    }
```

```
}
```

```
}
```



wowid

Disconnected

ardiz022

Device

13 Nov 2022 19:30

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
event_1	{"Alertdistance":61}	json	a few seconds ago
event_1	{"Alertdistance":66}	json	a few seconds ago
event_1	{"Alertdistance":27}	json	a few seconds ago
event_1	{"Alertdistance":53}	json	a few seconds ago
event_1	{"Alertdistance":88}	json	a few seconds ago

1 Simulation running