

Assignment-4

Date	27October 2022
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Project Name	Gas leakage Monitoring and Alerting System For Industries

Question :

Write code and connections in wokwi for ultrasonic sensors. That 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

Wokwi link:

<https://wokwi.com/projects/348225667753574994>

Code:

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

WiFiClient wifiClient;

#define ORG "ssi30e"
#define DEVICE_TYPE "pavithra"
#define DEVICE_ID "8838"
#define TOKEN "bPst59im2)xgp-VAqL"
#define speed 0.034

char server[] = ORG".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/status1/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; float
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(500);
          }
        initManagedDevice();
        Serial.println();
    } }
    void initManagedDevice() { if
    (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){
          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");
          } else
          {
              Serial.println("Publish FAILED");
          }
      }
    }

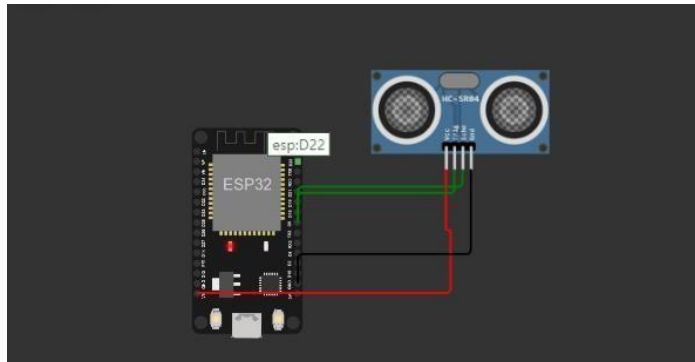
```

```

    }
}
}

```

Diagram:



Wokwi Output:

Wokwi Arduino IDE interface showing the sketch and simulation output.

```

1  #include <WiFi.h>
2  #include <PubSubClient.h>
3
4  WiFiClient wifiClient;
5
6  #define ORG "ssi30e"
7  #define DEVICE_TYPE "pavithra"
8  #define DEVICE_ID "8838"
9  #define TOKEN "bPst59im2)xgp-VAqL"
10 #define speed 0.034
11
12
13 char server[] = ORG".messaging.internetofthings.ibmcloud.com";
14 char publishTopic[] = "iot-2/evt/event_1/fmt/json";
15 char topic[] = "iot-2/cmd/home/fmt/String";
16 char authMethod[] = "use-token-auth";
17 char token[] = TOKEN;
18 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
19 PubSubClient client(server, 1883, wifiClient);
20 void publishData();
21 const int trigpin=5;
22 const int echopin=18;
23 String command;
24 String data="";
25 long duration;
26 float dist;
27 void setup()
28 {
29   Serial.begin(115200);

```

Simulation Output:

```

Sending payload: {"Alert distance":99.98}
Publish OK

Sending payload: {"Alert distance":99.98}
Publish OK

Sending payload: {"Alert distance":99.98}
Publish OK

```

IBM cloud output:

The screenshot displays the IBM Watson IoT Platform dashboard. The browser address bar shows the URL `ssi30e.internetofthings.ibmcloud.com/dashboard/devices/browse`. The dashboard header includes the user profile `pavithraibm127@gmail.com` and ID `ssi30e`. The main navigation bar has tabs for `Browse`, `Action`, `Device Types`, and `Interfaces`. A sidebar on the left contains icons for various IoT functions. The main content area shows details for a device with ID `8838`, which is `Connected` and named `pavithra`. The `Recent Events` tab is selected, showing a table of events. The table has columns for `Event`, `Value`, `Format`, and `Last Received`. Below the table, it indicates `0 Simulations running`.

Event	Value	Format	Last Received
event_1	{"Alert distance":99.98}	json	a few seconds ago
event_1	{"Alert distance":99.98}	json	a few seconds ago
event_1	{"Alert distance":99.98}	json	a few seconds ago
event_1	{"Alert distance":99.98}	json	a few seconds ago
event_1	{"Alert distance":99.98}	json	a few seconds ago