

GAS LEAKAGE MONITORING AND ALERTING SYSTEM

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ASSIGNMENT 4:

Write code and connections in wokwi for ultrasonic sensor.

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

Upload document with wokwi share link and images of IBM cloud.

CODE:

```
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");
        }
    }
}
}

```

WOKWI LINK:

<https://wokwi.com/projects/347229067526799956>

OUTPUT:

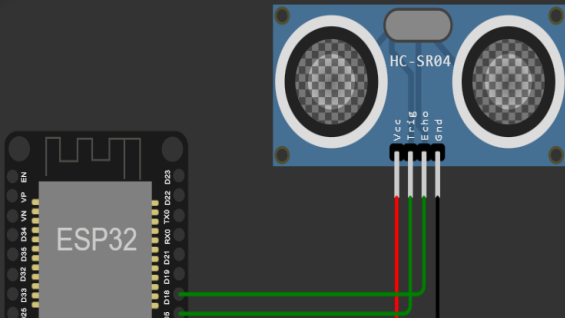
WOKWI SAVE SHARE sketch.ino Docs

sketch.ino diagram.json libraries.txt Library Manager

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 #include <ArduinoJson.h>
4
5 WiFiClient wificlient;
6
7 #define ORG "weu5q0"
8 #define DEVICE_TYPE "Arduino"
9 #define DEVICE_ID "12345"
10 #define TOKEN "Qyp?_u0?STwdS9xLGm"
11 #define speed 0.034
12
13 char server[] = ORG ".messaging.internetofthings.ibm"
14 char publishTopic[] = "iot-2/evt/Data/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_
19 PubSubClient client(server, 1883, wificlient);
20 void publishData();
21
22 const int trigpin=5;
23 const int echopin=18;
24 String command;
25 String data="";
26
```

Simulation

00:16.581 100%



Publish OK

Sending payload: {"AlertDistance":78}

Publish OK

Sending payload: {"AlertDistance":78}

Publish OK



Browse

Action

Device Types

Interfaces

Add Device +



Device ID	Status	Device Type	Class ID	Date Added	
12345	Connected	Arduino	Device	Nov 2, 2022 8:46 PM	→ ...

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
Data	{"AlertDistance":78}	json	a few seconds ago
Data	{"AlertDistance":78}	json	a few seconds ago
Data	{"AlertDistance":78}	json	a few seconds ago