

Assignment-4

BATCH	B12-6A2E
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PROJECT	Gas Leakage Monitoring & Alerting System for Industries

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

```
#include <WiFi.h>

#include <PubSubClient.h>
#include <ArduinoJson.h>

WiFiClient wifiClient;

#define ORG "mz6rat"
#define DEVICE_TYPE "arduino"
#define DEVICE_ID "54321"
#define TOKEN "26072002"
#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");

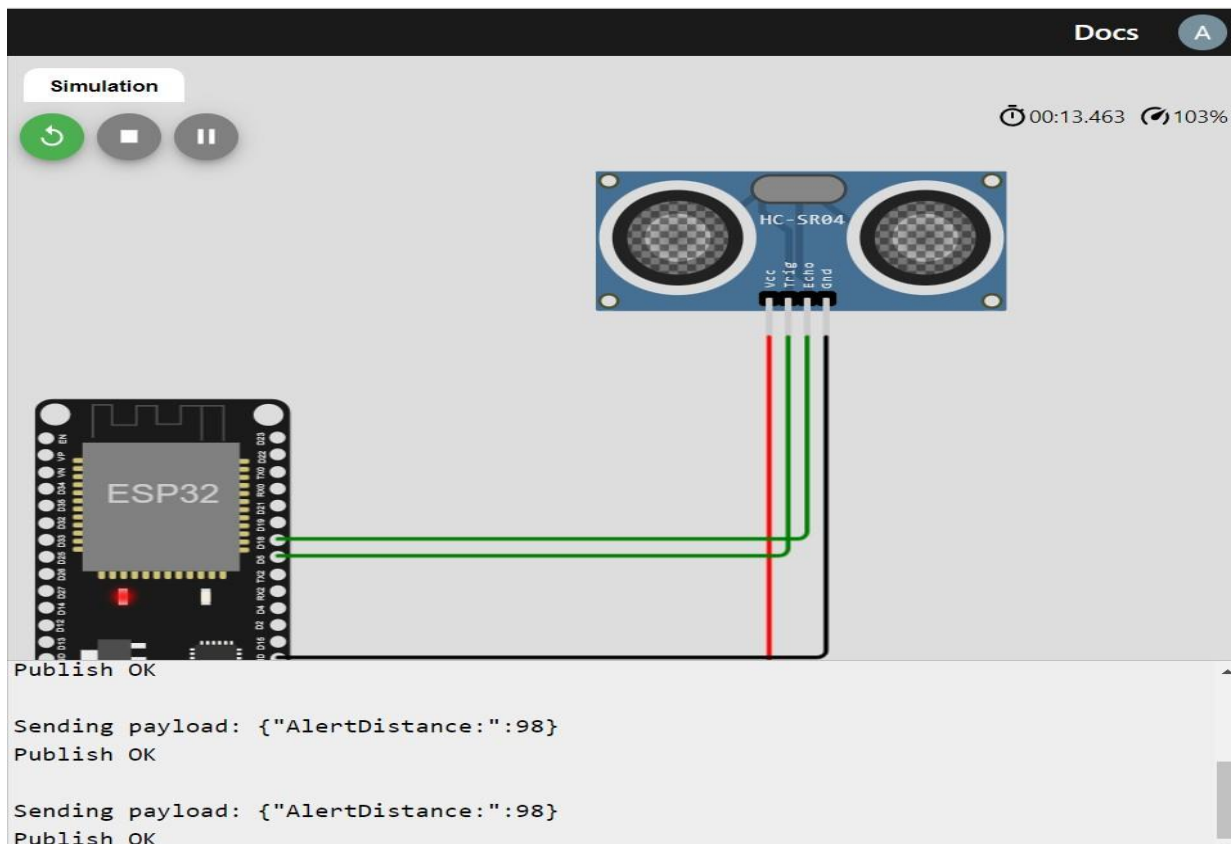
  } else {
    Serial.println("Publish FAILED");
  }
}
}
}

```

WOKWI LINK:

<https://wokwi.com/projects/346571307833360979>

OUTPUT:





Browse

Action

Device Types

Interfaces

Add Device +



<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	
▼	54321	Connected	arduino	Device	Oct 26, 2022 2:05 PM		→ ...

Identity Device Information Recent Events State Logs X

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":98}	json	a few seconds ago
Data	{"AlertDistance":98}	json	a minute ago
Data	{"AlertDistance":98}	json	a minute ago
Data	{"AlertDistance":98}	json	a minute ago
Data	{"AlertDistance":98}	json	a minute ago

