

## **ASSIGNMENT 4**

Write code and connections in wokwi for ultrasonic sensor.

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 images of ibm cloud

## CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "ktymlx"
#define DEVICE_TYPE "new"
#define DEVICE_ID "09876"
#define TOKEN "Kamesh@2002"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/event/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 += "\"}";

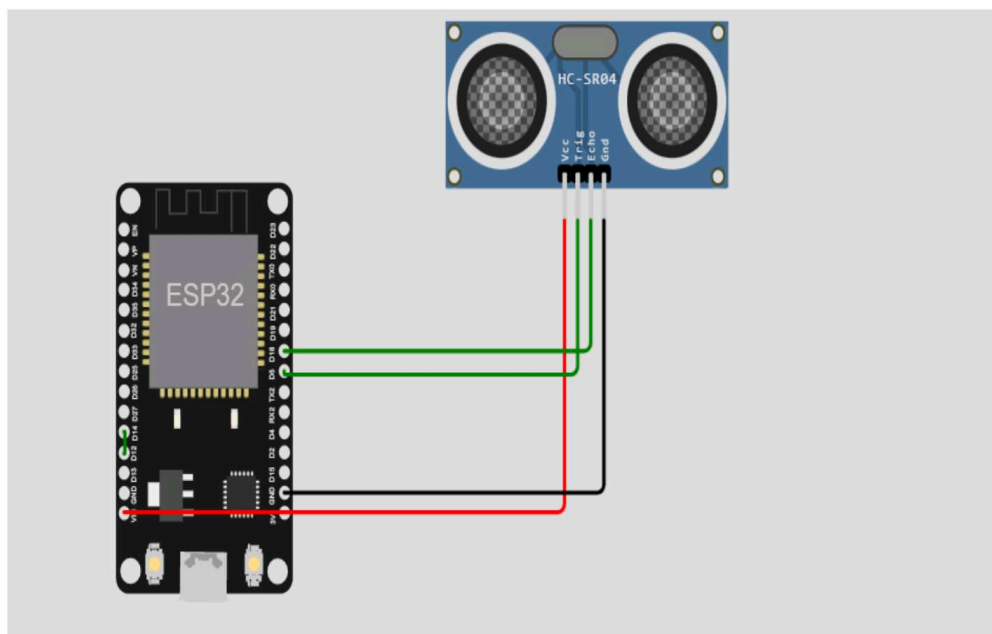
Serial.print("\n");
Serial.print("Sending payload: ");
Serial.println(payload);
if(client.publish(publishTopic, (char*) payload.c_str())) {
    Serial.println("Publish OK");
}else {
    Serial.println("Publish FAILED");
}

}

}

```

## CONNECTIONS:



## OUTPUT:

WOKWI

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SAVE SHARE

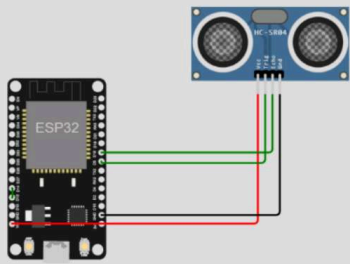
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Docs

sketch.ino diagram.json libraries.txt Library Manager

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36   pinMode(echopin, INPUT);
37   wifiConnect();
38   mqttConnect();
39 }
```

Simulation



Sending payload: {"Alert Distance":92.99}  
Publish OK

Sending payload: {"Alert Distance":92.94}  
Publish OK

Sending payload: {"Alert Distance":92.96}

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W sketchino copy - Wokwi Arduino x Service Details - IBM Cloud x IBM Watson IoT Platform x +

ktymk.internetofthings.ibmcloud.com/dashboard/devices/browse

IBM Watson IoT Platform

vempallikameshwarreddy.eco2019@dce.edu.in ID: ktymk

Browse Action Device Types Interfaces

Add Device +

Search by Device ID

Device Simulator

Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location
09876	Connected	new	Device	Nov 4, 2022 5:59 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
event	{"Alert distance":92.99}	json	a few seconds ago
event	{"Alert distance":92.99}	json	a few seconds ago
event	{"Alert distance":92.99}	json	a few seconds ago
event	{"Alert distance":92.99}	json	a few seconds ago
event	{"Alert distance":92.99}	json	a few seconds ago

1 Simulation running

Type here to search

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**WOKWI LINK:**

**<https://wokwi.com/projects/347396299786551891>**