

Assignment-4

Date	24 October 2022
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Project Name	Industry Specific Intelligent Fire Management System

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 images.

Wokwi:

<https://wokwi.com/projects/348555771547484755>

Code:

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

WiFiClient wifiClient;

#define ORG "p5jn2d"
#define DEVICE_TYPE "Kalai"
#define DEVICE_ID "Arasan"
#define TOKEN "WwN@ztcZD+6h(s_Zfu"
#define speed 0.034

char server[] = ORG".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/event_1/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(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");
}
}

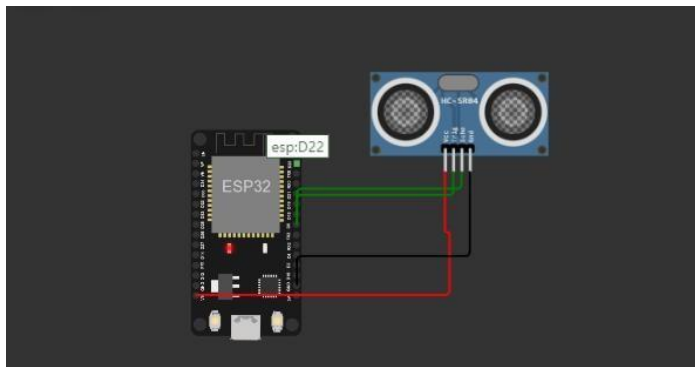
```

```

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 Output:

```

1 #include <WiFi.h>
2 #include <PubSubClient.h>
3
4 WiFiClient wifiClient;
5
6 #define ORG "p5jn2d"
7 #define DEVICE_TYPE "Kalai"
8 #define DEVICE_ID "Arasan"
9 #define TOKEN "Wln@ztcZD+6h(s_Zfu"
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";
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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);
30   pinMode(trigpin, OUTPUT);

```

Simulation

Connecting to Wifi. Wifi connected, IP address: 10.10.0.2
Reconnecting MQTT client to p5jn2d.messaging.internetofthings.ibmcloud.com
subscribe to cmd OK

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Browse Devices

All Devices Diagnose

This table shows a summary of all devices that have been added. It can be filtered, organized, and searched. To get started, you can add devices by using the Add Device button, or by using API.

Search by Device ID

Device ID	Status	Device Type
Arasan	Disconnected	Kalai

Items per page 50 | 1-1 of 1 item

Device Type: Kalai

Events 1 New event type

Event type name event_1 Send

Schedule 20 Every Minute

Payload Specify the event payload in the editor window or by uploading a CSV file.

```
0 {
1   "randomNumber": random(0, 100)
2 }
3
```

Upload a CSV file

What functions can I apply?

IBM cloud output:

IBM Watson IoT Platform

Browse Action Device Types Interfaces

Add Device

Device ID	Status	Device Type	Class ID	Date Added
Arasan	Disconnected	Kalai	Device	Nov 17, 2022 12:03 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_1	{"randomNumber":31}	json	a few seconds ago
event_1	{"randomNumber":65}	json	a few seconds ago
event_1	{"randomNumber":45}	json	a few seconds ago
event_1	{"randomNumber":52}	json	a few seconds ago
event_1	{"randomNumber":82}	json	a few seconds ago

1 Simulation running