

Smart Waste Management System for Metropolitan Cities -ASSIGNMENT 4

Name	KALAIARASI. R
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Team ID	PNT2022TMID38381
Project Name	Smart Waste Management System for Metropolitan Cities

ASSIGNMENT 4:

Write code and connections in wokwi for ultrasonic sensors.

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;

#define ORG "o1z9pr"
#define DEVICE_TYPE "raspberrypi"
#define DEVICE_ID "USE YOUR ID"
#define TOKEN "USE YOUR TOKEN"
#define speed 0.034

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

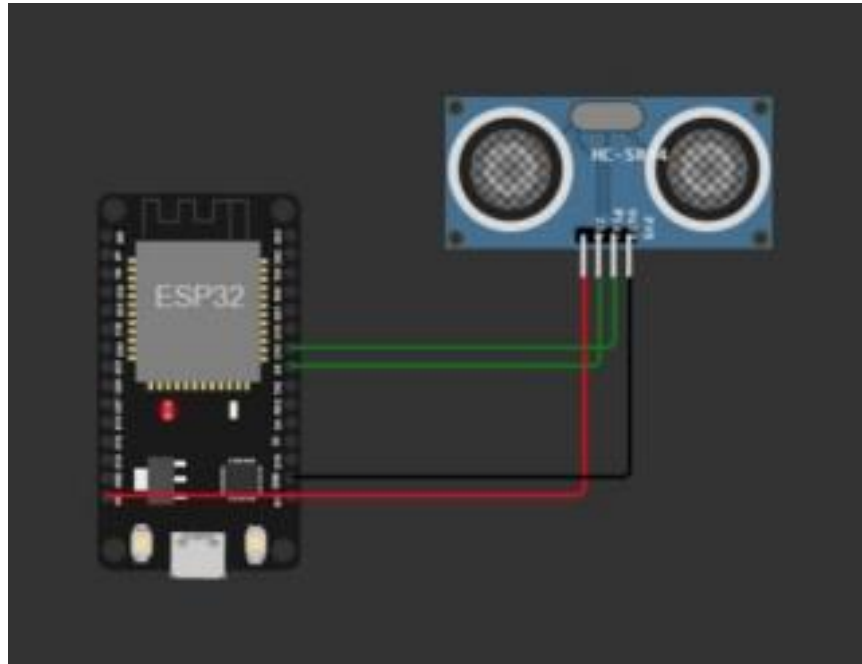
void publishData()
{
    digitalWrite(trigpin, LOW);
    digitalWrite(trigpin, HIGH);
    delayMicroseconds(10);
    digitalWrite(trigpin, LOW);
    duration=pulseIn(echopin, HIGH);
    dist=duration*speed/2;
    if(dist<100){
        String payload = "{\"Alert distance\":\"";
        payload += dist;
        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");
        }
    }
}

```



CONNECTIONS:



WOKWI LINK:

<https://wokwi.com/projects/346567938388525651>

OUTPUT:

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wifiClient;
4 #define ORG "oliz9pr"
5 #define DEVICE_TYPE "raspberrypi"
6 #define DEVICE_ID "USE YOUR ID"
7 #define TOKEN "USE YOUR TOKEN"
8 #define speed 0.034
9 char server[] = ORG
10 ".messaging.internetofthings.ibmcloud.com"; char
11 publishTopic[] = "iot-2/evt/raspberrypi_1/fmt/json";
12 char topic[] = "iot-2/cmd/home/fmt/String";
13 char authMethod[] = "use-token-auth";
14 char token[] = TOKEN;
15 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID
16 PubSubClient client(server, 1883, wifiClient);
17 void publishData();
18 const int trigpin=5;
19 const int echopin=18;
20 String command;
21 String data="";
22 long duration;
23 float dist;
24 void setup()
25 {
26   Serial.begin(115200);
27   pinMode(trigpin, OUTPUT);
28   pinMode(echopin, INPUT);
29   wifiConnect();
30   mqttConnect();
31 }
```

Connecting to Wifi..Wifi connected, IP address:
10.10.0.2
Reconnecting MQTT client to
oliz9pr.messaging.internetofthings.ibmcloud.com
.....

12345

Disconnected

raspberrypi

Device

Oct 6, 2022 8:52 PM

raspberrypi_1

Connected

raspberrypi

Device

Oct 14, 2021 3:47 PM

Identity

Device Information

Record Events

State

Logs

The recent events listed show the live stream of data that is coming and going from the device.

Event	Value	Parent	Last Modified
event_1	[{"Alert distance":10}]	join	a few seconds ago
event_1	[{"Alert distance":12}]	join	a few seconds ago
event_1	[{"Alert distance":14}]	join	a few seconds ago
event_1	[{"Alert distance":16}]	join	a few seconds ago
event_1	[{"Alert distance":18}]	join	a few seconds ago
9 Simulations running			