

Smart Waste Management System for Metropolitan Cities -ASSIGNMENT 4

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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 "4xg1mt"
#define DEVICE_TYPE "raspberrypi"
#define DEVICE_ID "12354"
#define TOKEN "12345678"
#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");
    }
}

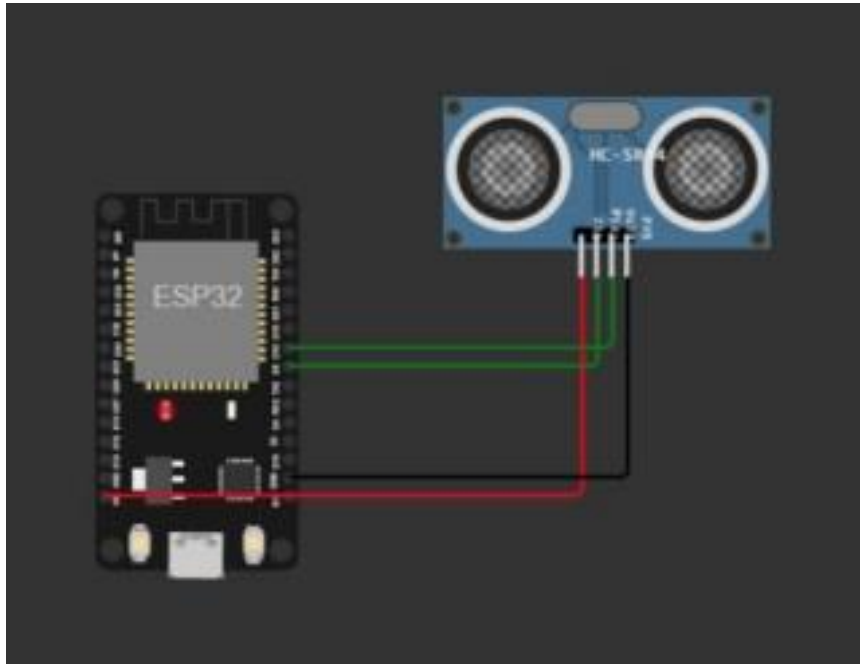
void publishData()
{
    digitalWrite(trigpin, LOW);
    digitalWrite(trigpin, HIGH);
    delayMicroseconds(10);
    digitalWrite(trigpin, LOW);
    duration=pulseIn(echopin, HIGH);
    dist=duration*speed/2;
    if(dist<100){
        String payload = "{\"Alert distance\":\"";
        payload += dist;
        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/346568757872689747>

OUTPUT:

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wifiClient;
4 #define ORG "4xg1mt"
5 #define DEVICE_TYPE "raspberrypi"
6 #define DEVICE_ID "12354"
7 #define TOKEN "12345678"
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
16 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
17 PubSubClient client(server, 1883, wifiClient);
18 void publishData();
19 const int trigpin=5;
20 const int echopin=18;
21 String command;
22 String data="";
23 long duration;
24 float dist;
25
26 void setup()
27 {
28   Serial.begin(115200);
29   pinMode(trigpin, OUTPUT);
30   pinMode(echopin, INPUT);
```

Connecting to Wifi...WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to
4xg1mt.messaging.internetofthings.ibmcloud.com

The screenshot displays the IBM Watson IoT Platform interface. At the top, there's a navigation bar with tabs for 'Ask Me Anything Session - P...', 'Post Attendee - Zoom', 'Service Details - IBM Cloud', 'IBM Watson IoT Platform', and 'sketch.ino - Wokwi Arduino'. The main header shows the URL 'https://4xg1mt.internetofthings.ibmcloud.com/dashboard/devices/browse' and a user profile with the email '412719106010@smartinternz.com' and ID '4xg1mt'.

The dashboard has a sidebar with icons for various functions. The main content area is titled 'IBM Watson IoT Platform' and includes a 'Browse' tab, 'Action', 'Device Types', and 'Interfaces'. A blue button labeled 'Add Device' is in the top right corner.

The device list shows three entries:

- Device ID: 12345, State: Disconnected, Type: Raspberrypi, Last Seen: Oct 10, 2022 6:39 PM.
- Device ID: 12354, State: Disconnected, Type: Raspberrypi, Last Seen: Oct 14, 2022 2:02 PM.
- Device ID: Raspberrypi_1, State: Connected, Type: Raspberrypi, Last Seen: Nov 1, 2022 1:26 PM.

The 'Raspberrypi_1' device is selected, and its details are shown in a modal window. The modal has tabs for 'Identity', 'Device Information', 'Recent Events', 'State', and 'Logs'. The 'Recent Events' tab is active, showing a message: 'The recent events listed show the live stream of data that is coming and going from this device.'

Below this message is a table of recent events:

Event	Value	Format	Last Received
event_1	{"alert distance":45}	json	a few seconds ago
event_1	{"alert distance":40}	json	a few seconds ago
event_1	{"alert distance":96}	json	a minute ago

At the bottom of the modal, it says 'Items per page 50 | 1-3 of 3 items'. A small notification box in the bottom right corner of the modal states '1 Simulation running'.