

SPRINT - 2

Date	5 NOV 2022
Team ID	PNT2022TMID01880
Project Name	Project- About Smart Waste Management System For Metropolitan Cities

CODE FOR DETECTING BIN LEVEL AND DISPLAYING IT IN IBM CLOUD:

esp32-ultraSonic.ino:

```
// Project: Smart Waste Management System for Metropolitan cities
#Team ID: PNT2022TMID01880
#include <WiFi.h>
#include <WiFiClient.h>
#include <PubSubClient.h>

const char* ssid = "Wokwi-GUEST";
const char* password = "";
#define ORG "1hx03x"
#define DEVICE_TYPE "cloud"
#define DEVICE_ID "232323"
#define TOKEN "12345678"
String data3;
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/status1/fmt/json";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;

const int trigPin = 5;
const int echoPin = 18;
long duration;
float distance;
```

```
WiFiClient wifiClient;
PubSubClient client(server, 1883, NULL, wifiClient);
void setup() {
    Serial.begin(115200);
    Serial.println();
    pinMode(trigPin, OUTPUT);
    pinMode(echoPin, INPUT);
    Serial.print("Connecting to ");

    Serial.print(ssid);
    WiFi.begin(ssid, password);
    while (WiFi.status() != WL_CONNECTED) {
        delay(500);
        Serial.print(".");
    }
    Serial.println("");

    Serial.print("WiFi connected, IP address: ");
    Serial.println(WiFi.localIP());

    if (!client.connected()) {
        Serial.print("Reconnecting client to ");
        Serial.println(server);
        while (!client.connect(clientId, authMethod, token)) {
            Serial.print(".");
            delay(500);
        }
        Serial.println("Bluemix connected");
    }
}

void loop() {
    client.loop();
    digitalWrite(trigPin, LOW); delayMicroseconds(2);
    digitalWrite(trigPin, HIGH); delayMicroseconds(10);
    digitalWrite(trigPin, LOW); duration = pulseIn(echoPin, HIGH);
```

```
distance = duration * 0.034/2;
PublishData(distance);
delay(5000);
}
```

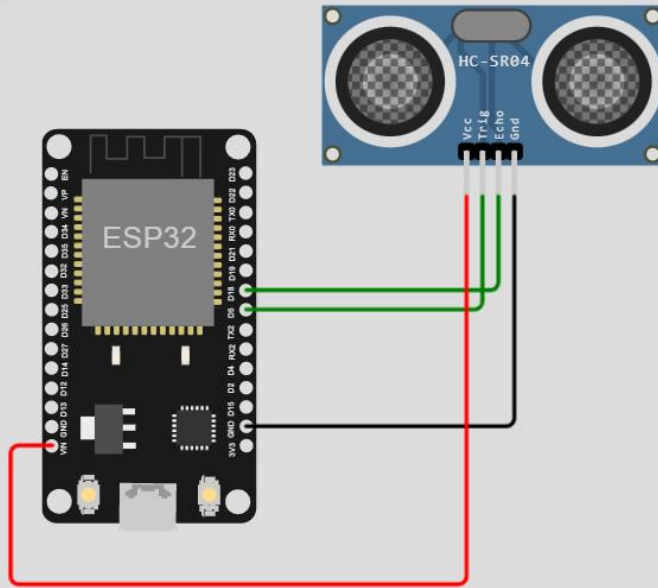
```
void PublishData(float dist) {
int binlevel = map(dist, 0 , 400, 100,0);
Serial.println(binlevel);
String payload = "{\"Distance\":\"";
payload += dist;
payload += "\",\"latitude\":\"\"11.5215151\"";
payload += "\",\"longitude\":\"\"77.1388062\"";
payload += "\",\"binlevel\":\"";
```

```
payload += binlevel;
payload += "\"";
Serial.print("Sending payload: ");
Serial.println(payload);
if (client.publish(publishTopic, (char*)
payload.c_str())) {
Serial.println("Publish ok");
}

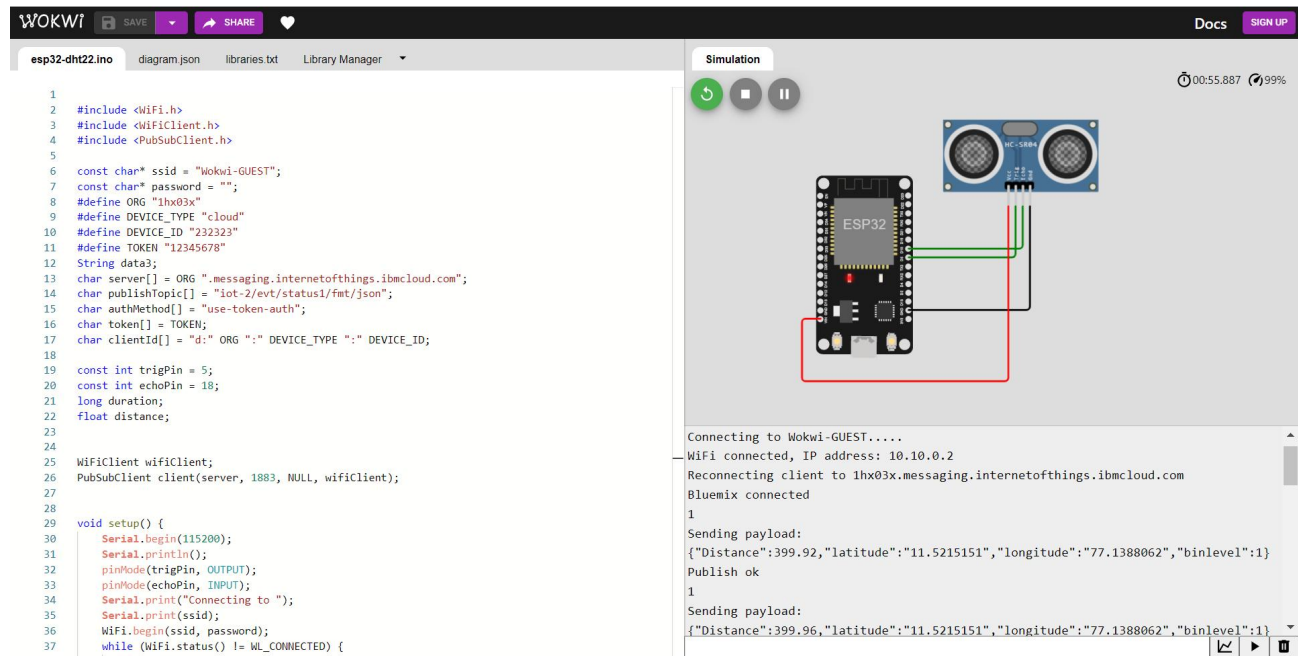
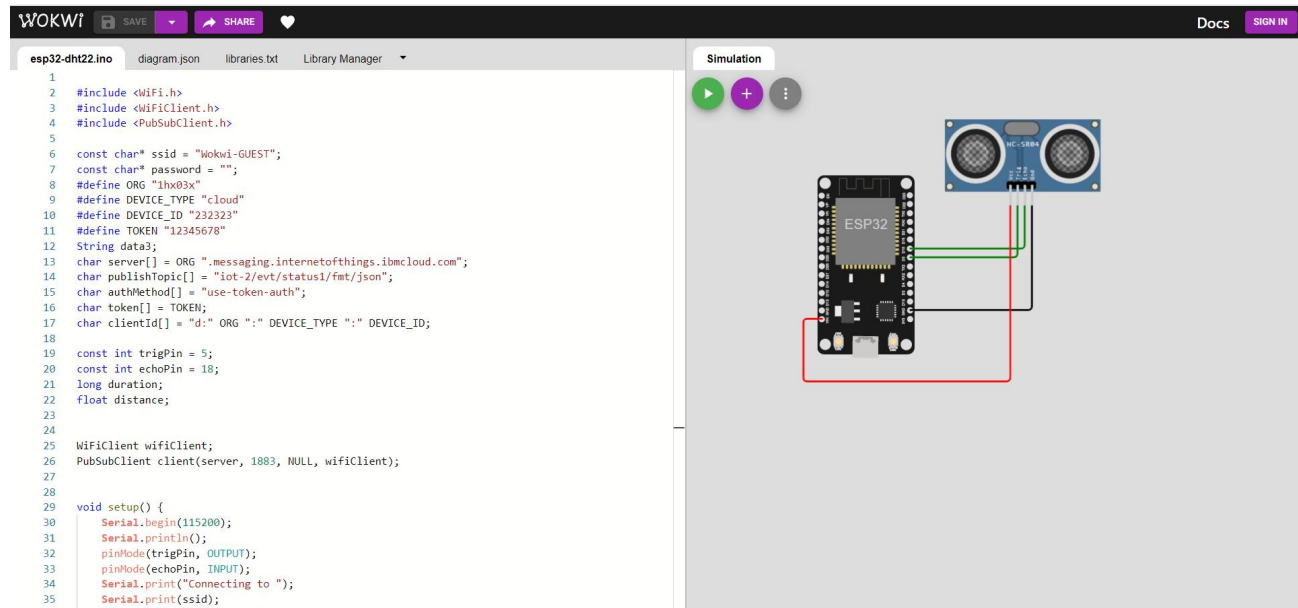
else {
Serial.println("Publish failed");
}
}
```

CIRCUIT DIAGRAM:

Simulation



SIMULATION IN WOKWI:



WOKWI LINK: <https://wokwi.com/projects/348836138877715027>

The screenshot displays the IBM Watson IoT Platform interface. At the top, there's a navigation bar with tabs for "Browse", "Action", "Device Types", and "Interfaces". The "Add Device" button is visible in the top right. Below the navigation bar, a summary text states: "This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API."

A search bar labeled "Search by Device ID" is present. On the right side, there are controls for "Device Simulator" (a toggle switch) and icons for filters and sorting.

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	Descriptive Location	Added By	Device Class
<input checked="" type="checkbox"/>	232323	● Connected	cloud	Device	Nov 20, 2022 12:23 PM		7376191ec309@smartinternz.com	→ ...

Below the main table, there are tabs for "Identity", "Device Information", "Recent Events", "State", and "Logs". The "Recent Events" tab is currently selected.

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

Event	Value	Format	Last Received
status	{"Distance":99,"latitude":11.237919061707885...	json	a few seconds ago
status	{"Distance":75,"latitude":11.21336255027092,"...	json	a few seconds ago
status	{"Distance":61,"latitude":11.225098748763434...	json	23 minutes ago
status	{"Distance":66,"latitude":11.215185174421823...	json	23 minutes ago
status	{"Distance":41,"latitude":11.206082076734994...	json	23 minutes ago