

Sprint

Team ID	PNT2022TMID38320
Project Name	Smart waste management system for metropolitan cities

Code:

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>
WiFiClient wifiClient;
#define ORG "km27sq"
#define DEVICE_TYPE "Smartbin"
#define DEVICE_ID "City"
#define TOKEN "12345678"
#define speed 0.034
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/status1/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=19;
String command;
String data="";
String latitude="13.1231";
String longitude="79.9120";
long duration;
int dist;
String icon;
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(".");
      Serial.print("*");
      delay(1000);
    }
    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<20){
    icon="Bin is Full";
  }
  else{
    icon="Bin is not Full";
  }
  DynamicJsonDocument doc(1024);
  String payload;
  doc["Latitude"]=latitude;
  doc["Longitude"]=longitude;
  doc["Distance"]=dist;
  doc["Bin Status"]=icon;
  serializeJson(doc, payload);
  delay(3000);
  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");
}
}

```

WOKWI | **SAVE** | **SHARE** | **bin location** | **Docs**

sketch.ino | diagram.json | libraries.txt | Library Manager

```

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4 WiFiClient wifiClient;
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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=19;
20 String command;
21 String data="";

```

Simulation

00:25.671 84%

ESP32

,"Bin Status":"Bin is not Full"}
Publish OK

Sending payload:
{ "Latitude": "13.1231", "Longitude": "79.9120", "Distance": 399
, "Bin Status": "Bin is not Full" }
Publish OK

IBM Watson IoT Platform | 412619106014@smartinternz.com | ID: km27sq

Browse | Action | Device Types | Interfaces | **Add Device**

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

Event	Value	Format	Last Received
status1	{"Latitude": "13.1231", "Longitude": "79.9120", "Di...	json	a few seconds ago
status1	{"Latitude": "13.1231", "Longitude": "79.9120", "Di...	json	a few seconds ago
status1	{"Latitude": "13.1231", "Longitude": "79.9120", "Di...	json	a few seconds ago
status1	{"Latitude": "13.1231", "Longitude": "79.9120", "Di...	json	a minute ago
status1	{"Latitude": "13.1231", "Longitude": "79.9120", "Di...	json	a minute ago