

ASSIGNMENT -4

Smart Waste Management System For Metropolitan Cities

TEAM ID-PNT2022TMID05191

Register number- 921319106079

Code:

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

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

```
WiFiClient wifiClient;
```

```
String data3;
```

```
#define ORG "4yi0vc"
```

```
#define DEVICE_TYPE "nodeMcu"
```

```
#define DEVICE_ID "Assignment4"
```

```
#define TOKEN "123456789"
```

```
#define speed 0.034
```

```
#define led 14
```

```
Char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
```

```
Char publishTopic[] = "iot-2/evt/Data/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(led, OUTPUT);  
  pinMode(trigpin, OUTPUT);  
  pinMode(echopin, INPUT);  
  wifiConnect();  
  mqttConnect();  
}
```

```
Void loop() {
```

```
  Bool isNearby = dist < 100;  
  digitalWrite(led, isNearby);
```

```
  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("IBM 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 = "{\\Normal 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");
}

}

If(dist>101 && dist<111){
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("Warning crosses 110cm – it automaticaly of the loop");

digitalWrite(led,HIGH);

}else {

Serial.println("Publish FAILED");

}

}

}

Void callback(char* subscribeTopic, byte* payload, unsigned int payloadLength){
Serial.print("callback invoked for topic:");

Serial.println(subscribeTopic);

For(int i=0; i<payloadLength; i++){

Dist += (char)payload[i];

}

Serial.println("data:" + data3);

If(data3=="lighton"){

Serial.println(data3);

digitalWrite(led,HIGH);

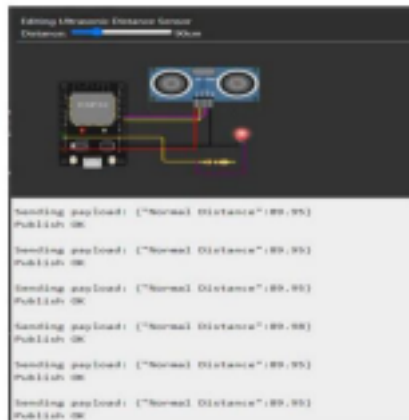
}

Data3="";

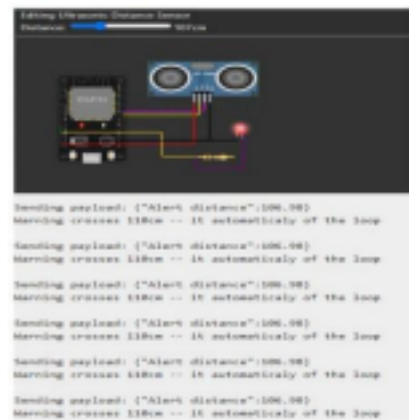
}

```

Output



1) when distance under 100 cm
it wil show normal distance



2) when distance cross 100 cm
it wil show ALERT with warning message
distance



when it cross above 110 cm it totally
move to off state once it reduce to 110 it on again

}

IBM CLOUD OUTPUT

Recent Events

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

Event	Value	Event	Last Modified
Event	("NormalDistance":89.95)	publish	4 few seconds ago
Event	("NormalDistance":89.95)	publish	4 few seconds ago
Event	("NormalDistance":89.95)	publish	4 few seconds ago
Event	("NormalDistance":89.95)	publish	4 few seconds ago
Event	("NormalDistance":89.95)	publish	4 few seconds ago

Recent Events

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

Event	Value	Event	Last Modified
Event	("Alert distance":106.98)	publish	4 few seconds ago
Event	("Alert distance":106.98)	publish	4 few seconds ago
Event	("Alert distance":106.98)	publish	4 few seconds ago
Event	("Alert distance":106.98)	publish	4 few seconds ago
Event	("Alert distance":106.98)	publish	4 few seconds ago

