ASSIGNMENT-4

Smart Waste Management System For Metropolitan Cities

TEAM ID-PNT2022TMID05191

String command;

String data="";

Register number- 921319106062

```
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;
```

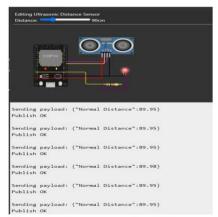
```
Long duration;
Float dist;
Void setup()
{
Serial.begin(115200);
pinMode(led, OUTPUT);
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();
mqttConnect();
}
Void loop() {
 Bool isNearby = dist < 100;
digitalWrite(led, isNearby);
publishData();
delay(500);
if (!client.loop()) {
  mqttConnect();
}
}
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");
 }
}
```

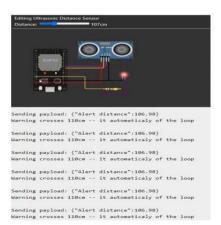
```
Void publishData()
{
 digitalWrite(trigpin,LOW);
 digitalWrite(trigpin,HIGH);
 delayMicroseconds(10);
 digitalWrite(trigpin,LOW);
 duration=pulseIn(echopin,HIGH);
 dist=duration*speed/2;
 if(dist<100){
  String payload = "{\"Normal Distance\":";
  Payload += dist;
  Payload += "}";
  Serial.print("\n");
  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++){</pre>
  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

Sanding payland; "Alert distance"; 188.96]

Merring crosses 180m - It automatically of the long

Sanding payland; ("Alert distance"; 186.96)

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Sanding payland; ("Alert distance"; 186.96)

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Sanding payland; ("Alert distance"; 186.96)

Sanding payland; ("Alert distance"; 180.96)

0...0

when it cross above 110 cm it totaly move to iff state once it reduce to 110 it on again

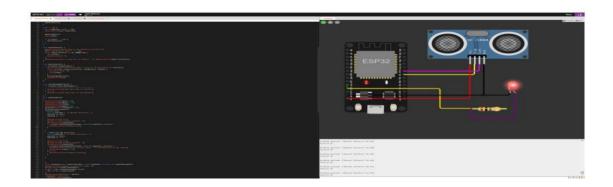
IBM CLOUD OUPUT

Recent Events

Event	Value	Particol	Last Received
Date	("Normal Distance"(89,95)	jacom	a few seconds ago
Dwis	("Normal Distance": 89.95)	jaon	a hew exceeds ago.
Date	("Normal Distance":89.95)	jaom	a few seconds ago
Dista	("Pepermat Distance": 89.95)	Same	a few excends ago
Date	("Pipernal Distance": 89,993	insen	a favor bascoccula auto

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

Ewent	Value	Format	Last Received	
Data	("Alart distance":106.98)	jaon	a few seconds ago	
Date	["Alert distance";307.03]	jaon	a few seconds ago	
Date	("Alert distance":106.98)	jeon	a few seconds ago	
Date	("Alert distance":106,98)	jace	a few seconds ago	



}