

# Assignment 4

## WOKWI PROGRAM

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Project Name	Smart Waste Management System for Metropolitan Cities
Date	29 oct 2022
Maximum Marks	2 marks

### Program:

```
#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");
}

}

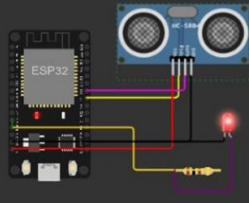
}

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

Editing Ultrasonic Distance Sensor  
Distance: 90cm



```
Sending payload: {"Normal Distance":89.95}
Publish OK

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Publish OK

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Publish OK

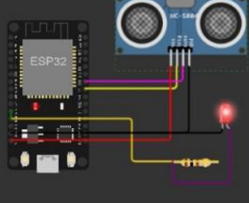
Sending payload: {"Normal Distance":89.98}
Publish OK

Sending payload: {"Normal Distance":89.95}
Publish OK

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Publish OK
```

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

Editing Ultrasonic Distance Sensor  
Distance: 107cm



```
Sending payload: {"Alert distance":106.98}
Warning crosses 110cm -- it automaticaly of the loop

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Warning crosses 110cm -- it automaticaly of the loop

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Warning crosses 110cm -- it automaticaly of the loop

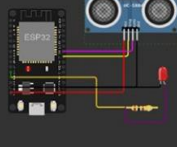
Sending payload: {"Alert distance":106.98}
Warning crosses 110cm -- it automaticaly of the loop

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Warning crosses 110cm -- it automaticaly of the loop

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Warning crosses 110cm -- it automaticaly of the loop
```

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

Editing Ultrasonic Distance Sensor  
Distance: 125cm



```
Sending payload: {"Alert distance":106.96}
Warning crosses 110cm -- it automaticaly of the loop

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Warning crosses 110cm -- it automaticaly of the loop
```

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

## IBM CLOUD OUPUT

### Recent Events

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

Event	Value	Format	Last Received
Data	["Normal Distance":89.95]	json	a few seconds ago
Data	["Normal Distance":89.95]	json	a few seconds ago
Data	["Normal Distance":89.95]	json	a few seconds ago
Data	["Normal Distance":89.95]	json	a few seconds ago
Data	["Normal Distance":89.95]	json	a 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	Format	Last Received
Data	["Alert distance":106.98]	json	a few seconds ago
Data	["Alert distance":107.03]	json	a few seconds ago
Data	["Alert distance":106.98]	json	a few seconds ago
Data	["Alert distance":106.98]	json	a few seconds ago
Data	["Alert distance":106.98]	json	a few seconds ago