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PROGRAM

Smart Waste Management System for Metropolitan Cities

ASSIGNMENT 4:

Write code and connections in wokwi for ultrasonic sensors.Whenever distance is less than 100 cms

send "alert" to ibm cloud and display in device recent events.Uplode document with wokwi share link

and images of ibm cloud.

CODE:

```
 #include  <WiFi.h>

#include <PubSubClient.h>

WiFiClient  wifiClient;

String data3;

#define ORG "ztcz45"

#define DEVICE_TYPE "naveen"

#define DEVICE_ID "naveen123"

#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);
```

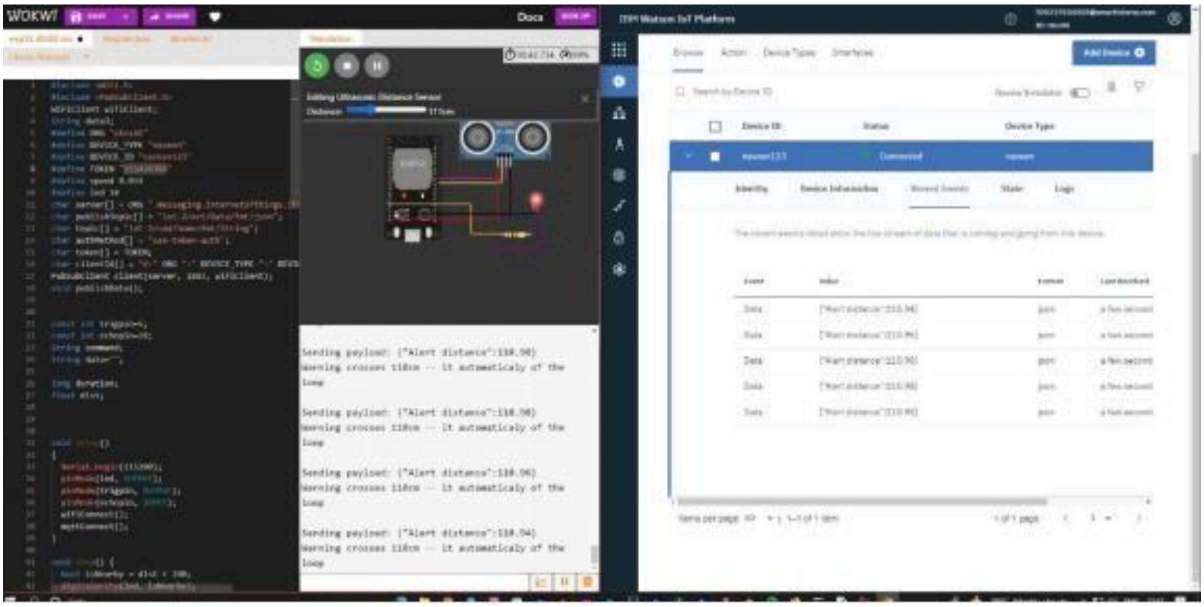
```
void publishData();
const int trigpin=5;
const int echopin=18;
String command;
String data="";
long duration;
float  dist;
void setup()
{
 Serial.begin(115200);
 pinMode(led, OUTPUT);
 pinMode(trigpin, OUTPUT);
 …
[10:32 pm, 23/10/2022]  Gogul B.E CSE: }
void mqttConnect() {
 if (!client.connected()) {
 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("IBMsubscribe 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:

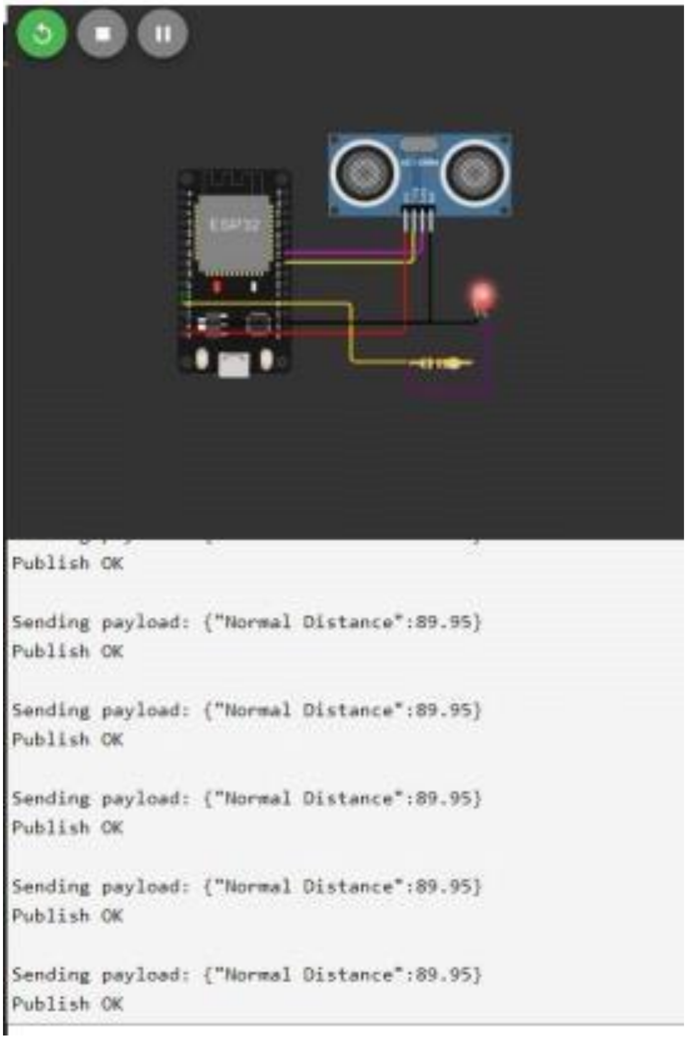


```
Sending payload: {"Alert distance":110.98}
Warning crosses 110cm -- it automaticaly of the loop

Sending payload: {"Alert distance":110.98}
Warning crosses 110cm -- it automaticaly of the loop

Sending payload: {"Alert distance":110.96}
Warning crosses 110cm -- it automaticaly of the loop

Sending payload: {"Alert distance":110.94}
Warning crosses 110cm -- it automaticaly of the loop
```

Device ID	Status	Device Type
[illegible]	Connected	[illegible]

Event	Value	Format	Last Received
Data	{"Alert distance":110.96}	json	a few seconds
Data	{"Alert distance":110.96}	json	a few seconds
Data	{"Alert distance":110.90}	json	a few seconds
Data	{"Alert distance":110.98}	json	a few seconds
Data	{"Alert distance":110.98}	json	a few seconds

1. When distance under 100 cm it wil show normal distance.



```
Publish OK

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

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

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Publish OK

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

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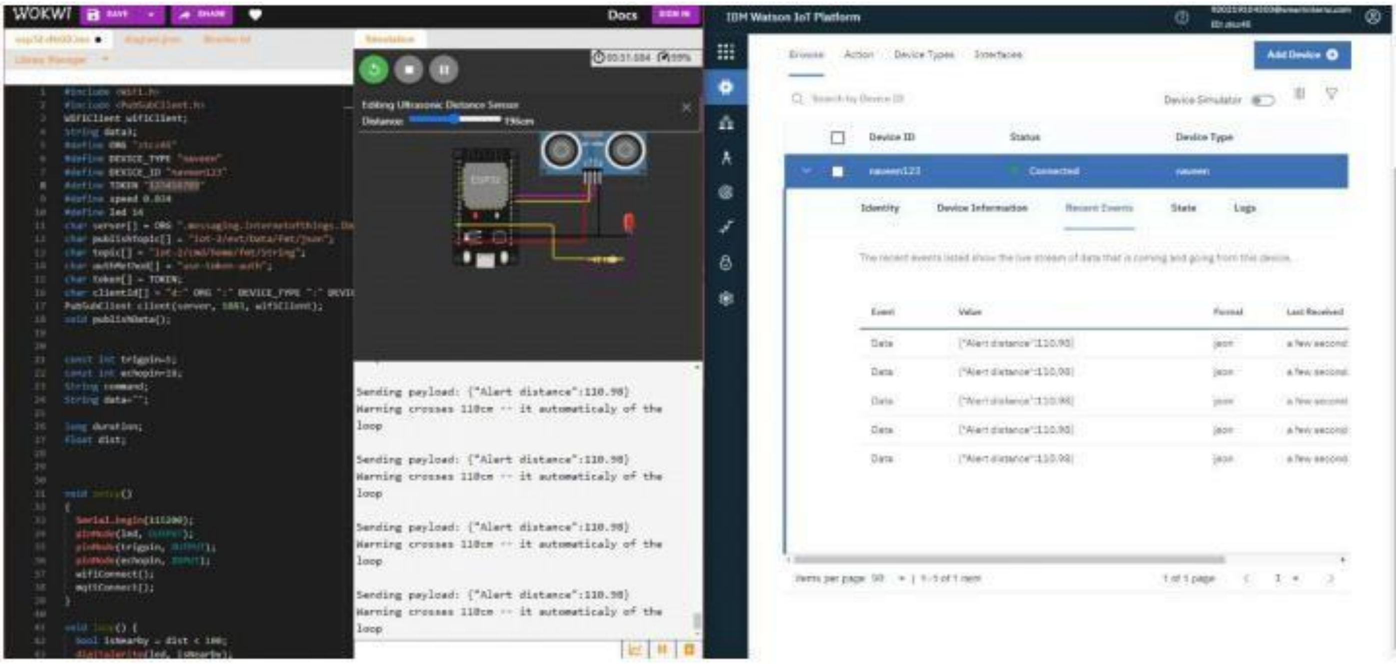

2. When distance cross 100 cm it will show ALERT warning message distance



```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "ztcz45"
#define DEVICE_TYPE "naveen"
#define DEVICE_ID "naveen123"
#define TOKEN "123456789"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ib
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 ":" DEVIC
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);
```

```
Sending payload: {"Alert distance":110.98}
Warning crosses 110cm -- it automaticaly of the
loop

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loop
```

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":110.98}	json	a few second
Data	{"Alert distance":110.98}	json	a few second
Data	{"Alert distance":110.98}	json	a few second
Data	{"Alert distance":110.98}	json	a few second
Data	{"Alert distance":110.98}	json	a few second

3. When it cross above 110 cm it today move to iff state once it

reduce to 11o it on again

Connection information:

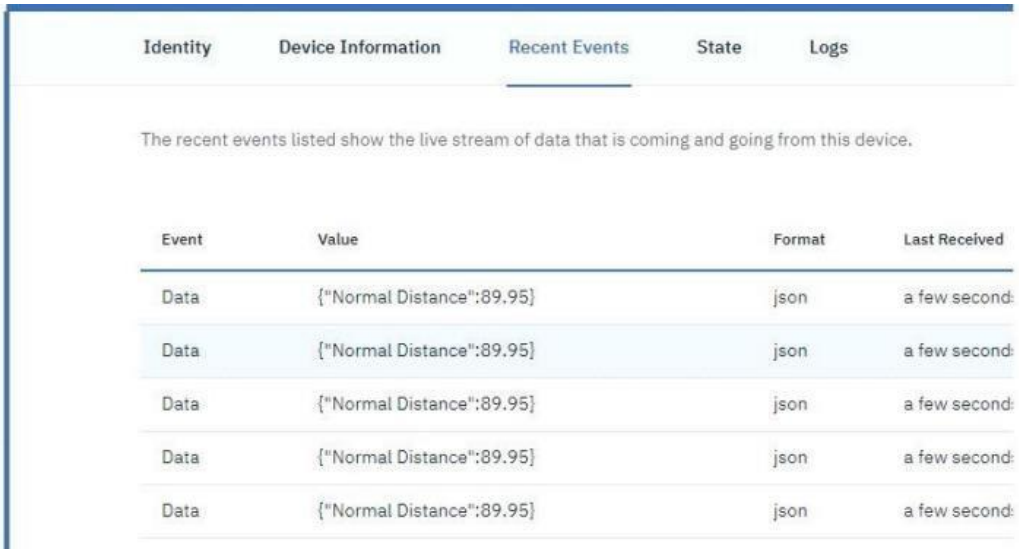
Basic conntection information about this device.

Organization ID : ztcz45

Device Type : THOL

Device ID : THOL123

Authentication Method : use-token-auth   Authentication Token : 123456789



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Event	Value	Format	Last Received
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Data	{"Normal Distance":89.95}	json	a few second