ASSIGNMENT 4
WOKWI PROGRAM

Assignment Date	23 OCT 2022
Student Name	MELVIN S
Student Roll Number	711719106025
Maximum Marks	2 Marks

ID Team: PNT2022TMID31725

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 linkand images of ibm cloud.

CODE:

```
 #include <WiFi.h>

#include

<PubSubClient.h>

WiFiClient wifiClient;

String data3;

#define ORG "ztcz45"

#define          DEVICE_TYPE

"Adarsh"                    #define

DEVICE_ID        "Melvin123"

#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);
```

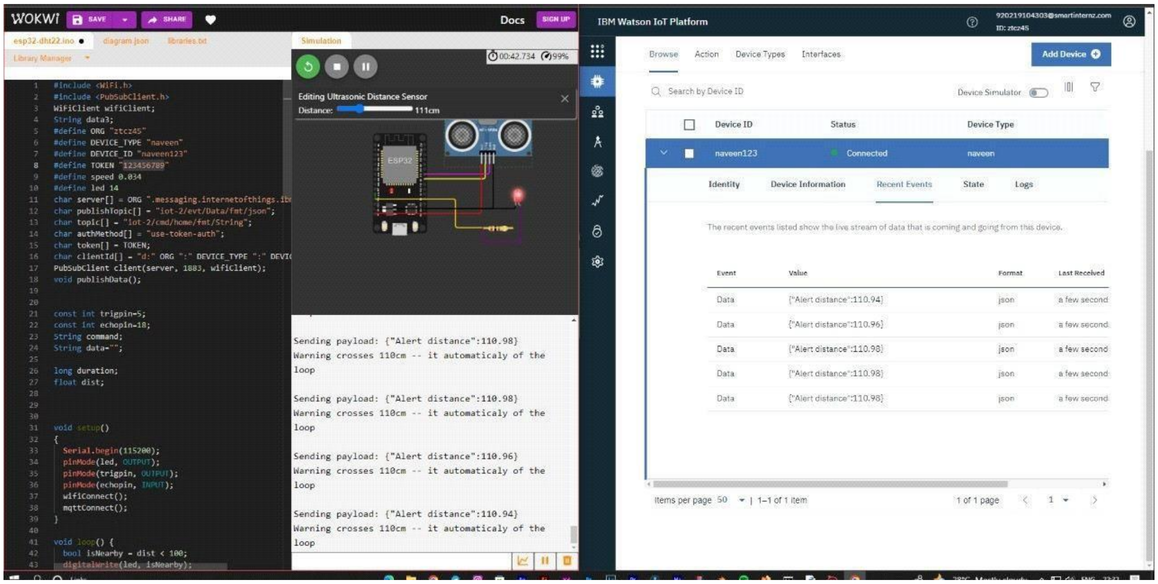
```
void publishData();


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] Melvin B.E ECE: }

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="";
}
```

out put:



```
#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.ibm
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

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
□	naveen123	Connected	naveen

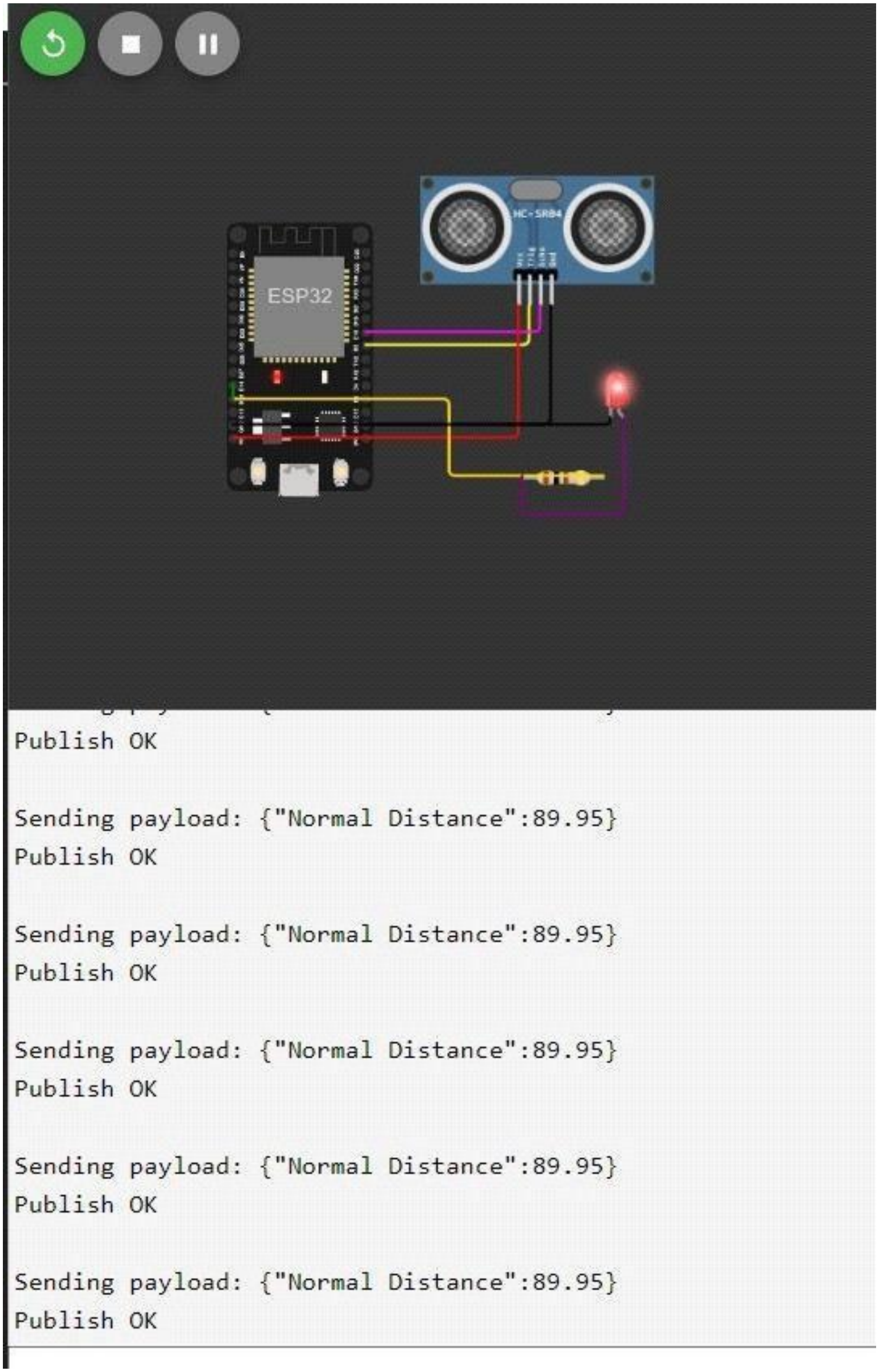
Identity | Device Information | Recent Events | State | Logs

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":110.94}	json	a few second
Data	{"Alert distance":110.96}	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

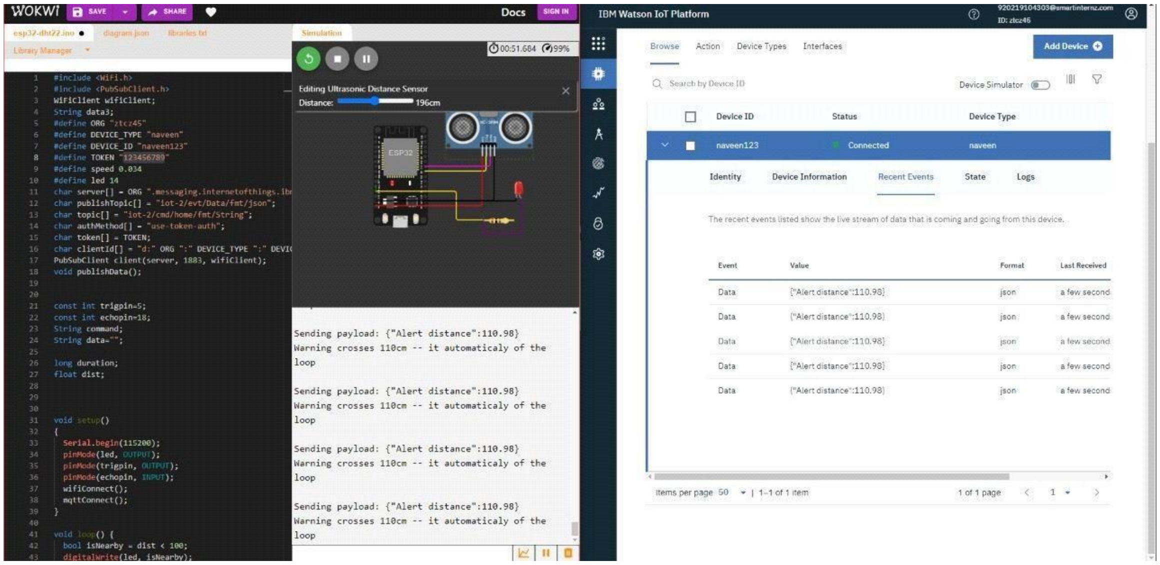
Items per page 50 | 1–1 of 1 item   1 of 1 page   1

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

Sending payload: {"Normal Distance":89.95}
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 wil show ALERT worningmessage 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.ibr
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);
```

Editing Ultrasonic Distance Sensor

Distance: 196cm

```
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":110.98}
Warning crosses 110cm -- it automaticaly of the
loop

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

□	Device ID	Status	Device Type
□	naveen123	● Connected	naveen

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

Items per page 50 | 1–1 of 1 item   1 of 1 page   1

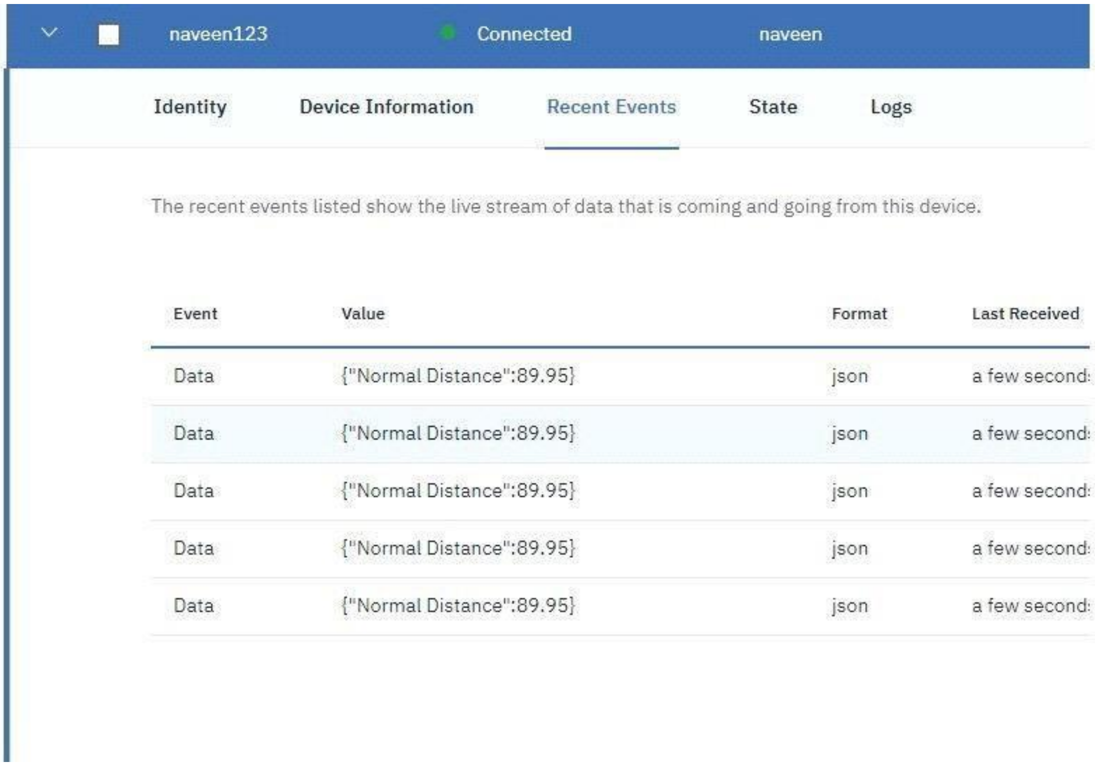
3. When it cross above 110 cm it today move to iff state once itreduce to 11o it on again

Connection information:

Basic conntection information about this device.

Organization ID	:	ztcz45
Device Type	:	Melvin
Device ID	:	Melvin123
Authentication Method	:	use-token-auth

Authentication Token : 123456789



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 second
Data	{"Normal Distance":89.95}	json	a few second
Data	{"Normal Distance":89.95}	json	a few second
Data	{"Normal Distance":89.95}	json	a few second
Data	{"Normal Distance":89.95}	json	a few second