

**NAME : ELANGO VAN S**

**REG NO : 513219104302**

**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. Upload 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("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:

The image shows a Wokwi IDE window on the left and a TTP IoT Platform web interface on the right.

**Wokwi IDE:** The code editor shows a C++ program for an Arduino Uno. The program initializes an ESP8266 module, connects to a Wi-Fi network, and sends data to a cloud server. The output window shows the following log messages:

```

Sending payload: ["Alert distance":118.96]
Warning crosses 118m -- It automatically of the loop

Sending payload: ["Alert distance":118.96]
Warning crosses 118m -- It automatically of the loop

Sending payload: ["Alert distance":118.96]
Warning crosses 118m -- It automatically of the loop

Sending payload: ["Alert distance":118.96]
Warning crosses 118m -- It automatically of the loop

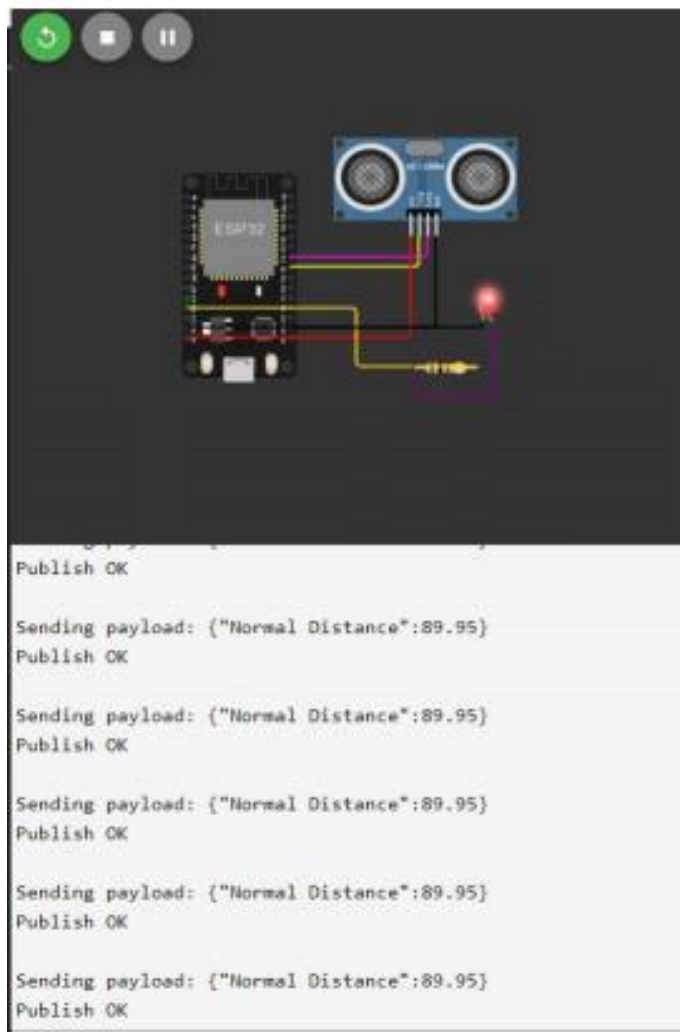
```

**TTP IoT Platform:** The web interface shows a list of devices. The table below displays the data for the device 'esp8266-01'.

Device ID	Status	Device Type
esp8266-01	Connected	esp8266

The table also includes columns for Identity, Device Information, Recent Events, State, and Logs. The Recent Events section shows a stream of data being received from the device.

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



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

The screenshot displays the Wokwi IDE on the left, where a C++ program for an Arduino Uno is being simulated. The code includes a distance sensor and a loop that checks the distance. When the distance crosses 100 cm, it triggers an alert. The right side shows the IBM Watson IoT Platform interface, specifically the 'Recent Events' tab for a device named 'ELANGO123'. The events table shows a series of alerts triggered at regular intervals.

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

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

reduce to 110 it on again

Connection information:

Basic connection information about this device.

Organization ID : ztcz45

Device Type : ELANGO

Device ID : ELANGO123

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

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	{"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	