

Assignment Date	27 OCT 2022
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Team ID	PNT2022TMID46743
Project Title	Signs with smart connectivity for better road safety
Maximum Marks	2 marks

ASSIGNMENT 4

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cm s send an "alert" to the IBM cloud and display in the device recent events. Upload document with wokwi share link and images of IBM cloud.

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "vfvcf7"
#define DEVICE_TYPE "dharshini"
#define DEVICE_ID "dharshu123"
#define TOKEN "12345678"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/dharshini/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 = "{\"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 automatically of
the loop");
            digitalWrite(led, HIGH);
        }

    }

    if(dist>101 && dist<111){
        String payload = "{\"Normal Distance\":\"";
        payload += dist;
        payload += "\"}";

        Serial.print("\n");
        Serial.print("Sending payload: ");
        Serial.println(payload);

    }

}

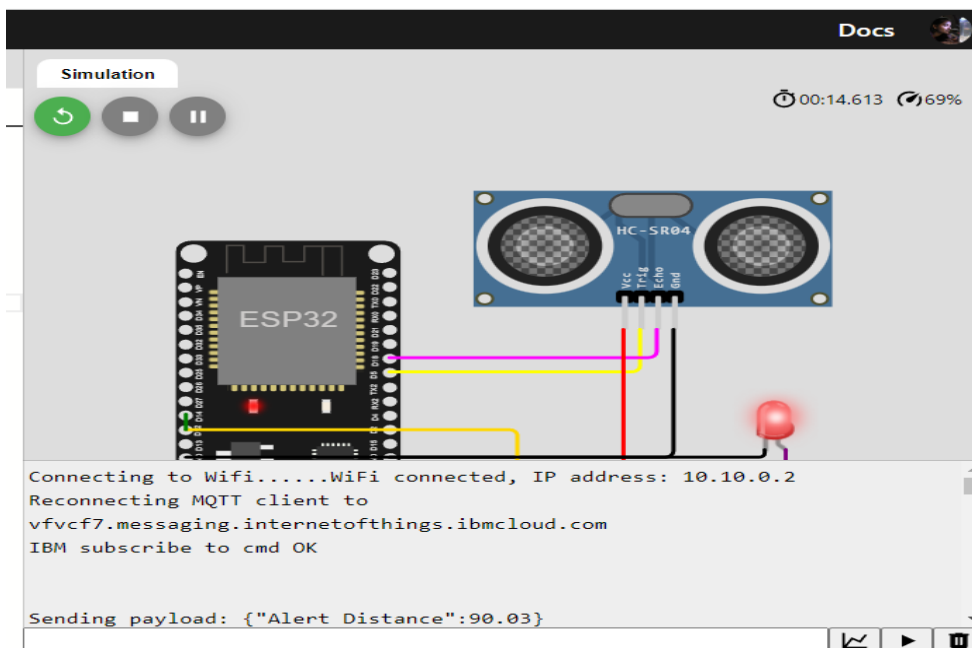
void callback(char* subscribeTopic, byte* payload, unsigned int
payloadLength){

```

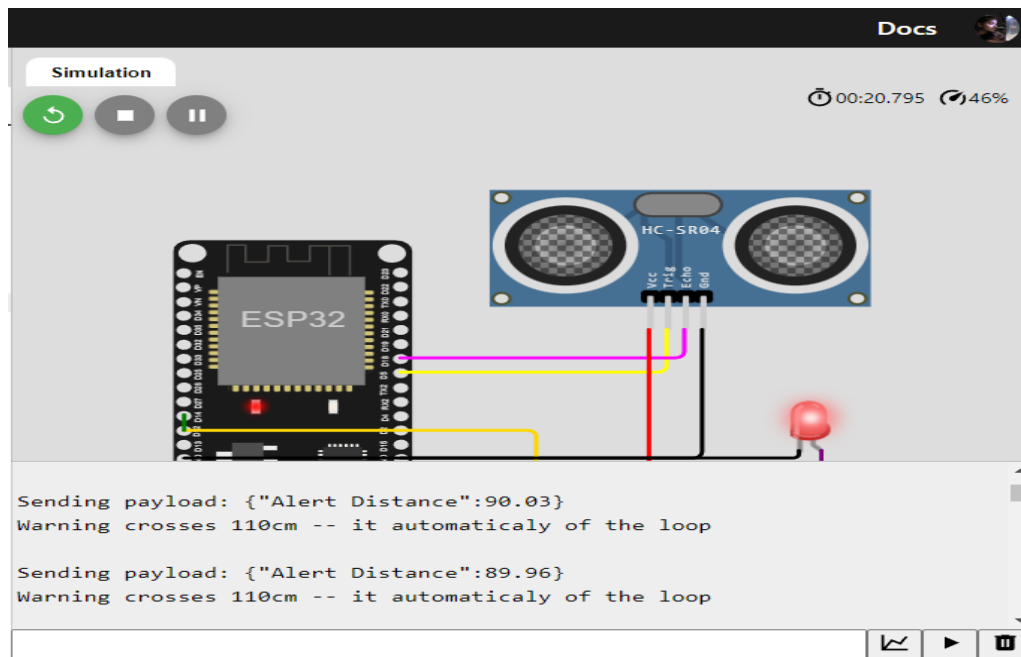
```

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="";
}

```



While Distance is greater than 100cm there is no alert message in the IBM cloud.



When the distance is less than 100cm alert message will appear in the IBM cloud.

Watson IoT Platform

dharsininece02@gmail.com
ID: vtvcf7

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Device Drilldown - dharshu123

Device Credentials

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

Connection Information

Basic connection information about this device.

Device ID	dharshu123
Device Type	dharshini
Date Added	Nov 15, 2022 4:50 AM
Added By	dharsininece02@gmail.com
Connection Status	Connected
	Connection Time: Nov 15, 2022 4:51 AM
	Client Address: 185.178.200.130 Insecure

Recent Events

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

Watson IoT Platform

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dharshtice02@gmail.com

ID: vfvcd7

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Device Drilldown - dharsht123

Connection Information

Recent Events

State

Device Information

Metadata

Diagnostics

Connection Logs

Device Actions

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

Event	Value	Format	Last Received
dharshtini	{"Alert Distance":89.95}	json	a few seconds ago
dharshtini	{"Alert Distance":89.95}	json	a few seconds ago
dharshtini	{"Alert Distance":89.95}	json	a few seconds ago
dharshtini	{"Alert Distance":89.95}	json	a few seconds ago
dharshtini	{"Alert Distance":89.95}	json	a few seconds ago

State

This table shows a list of data points that are reported by this device.

<https://wokwi.com/projects/348397556996244052>