

Assignment Date	27 OCT 2022
Student Name	Pavithra.P
Team ID	TNT2022TMID46747
Project Title	Smart solution for railways
Maximum Marks	2 Marks

## ASSIGNMENT 4

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms 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 "8rep8b"
#define DEVICE_TYPE "Pavithra"
#define DEVICE_ID "pavi123"
#define TOKEN "123456789"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Pavithra/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);

    }

}

```

```

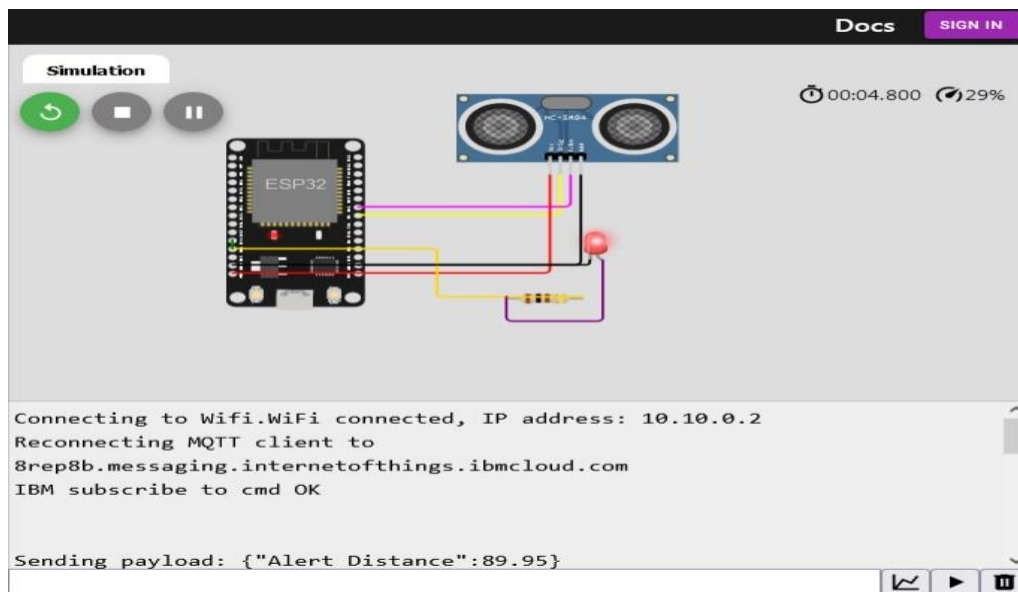
void callback(char* subscribeTopic, byte* payload, unsigned int
payloadLength){
    Serial.print("callback invoked for topic:");
    Serial.println(subscribeTopic);
    for(int i=0; i<payloadLength; i++){
        dist += (char)payload[i];
    }
}

```

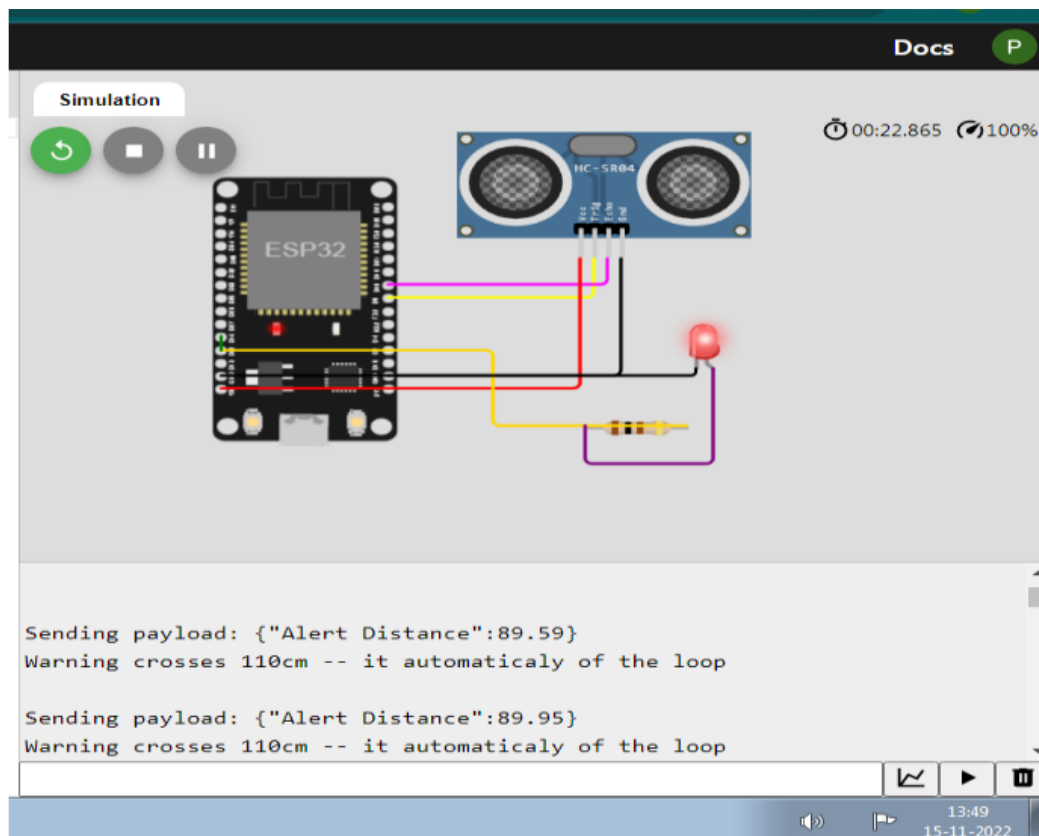
```

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.



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

Browse

Action

Device Types

Interfaces

▼

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nithitha123

●

Connected

nithitha

Device

Identity

Device Information

Recent Events

State

Logs

Device ID

nithitha123

Device Type

nithitha

Date Added

Nov 15, 2022 10:38 AM

Added By

nithithanithu@gmail.com

Connection Status

Connected

Connection Time: Nov 15, 2022 10:42 AM

Client Address: 50.31.197.64 Insecure

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## IBM CLOUD OUTPUT

The screenshot shows the IBM Watson IoT Platform interface. The browser address bar displays the URL: `8rep8b.internetofthings.ibmcloud.com/dashboard/devices/drilldown/Pavithra:pavi123?returnTo=/devices/browse`. The page title is "Device Drilldown - pavi123". The client address is "185.178.200.130 Insecure". The left sidebar contains a menu with options: Connection Information, Recent Events, State, Device Information, Metadata, Diagnostics, Connection Logs, and Device Actions. The main content area shows "Recent Events" with a table of data.

Event	Value	Format	Last Received
Pavithra	["Alert Distance":89.54]	json	a few seconds ago
Pavithra	["Alert Distance":89.98]	json	a few seconds ago
Pavithra	["Alert Distance":89.95]	["Alert Distance":89.98]on	a few seconds ago

<https://wokwi.com/projects/348375045941232211>