

Assignment Date	27 OCT 2022
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Team ID	TNT2022TMID46732
Project Title	Industry Specific Intelligent Fire Management System
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 "xkw4zg"
#define DEVICE_TYPE "Akalya"
#define DEVICE_ID "Akalya123"
#define TOKEN "123456789"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Akalya/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];
    }
}

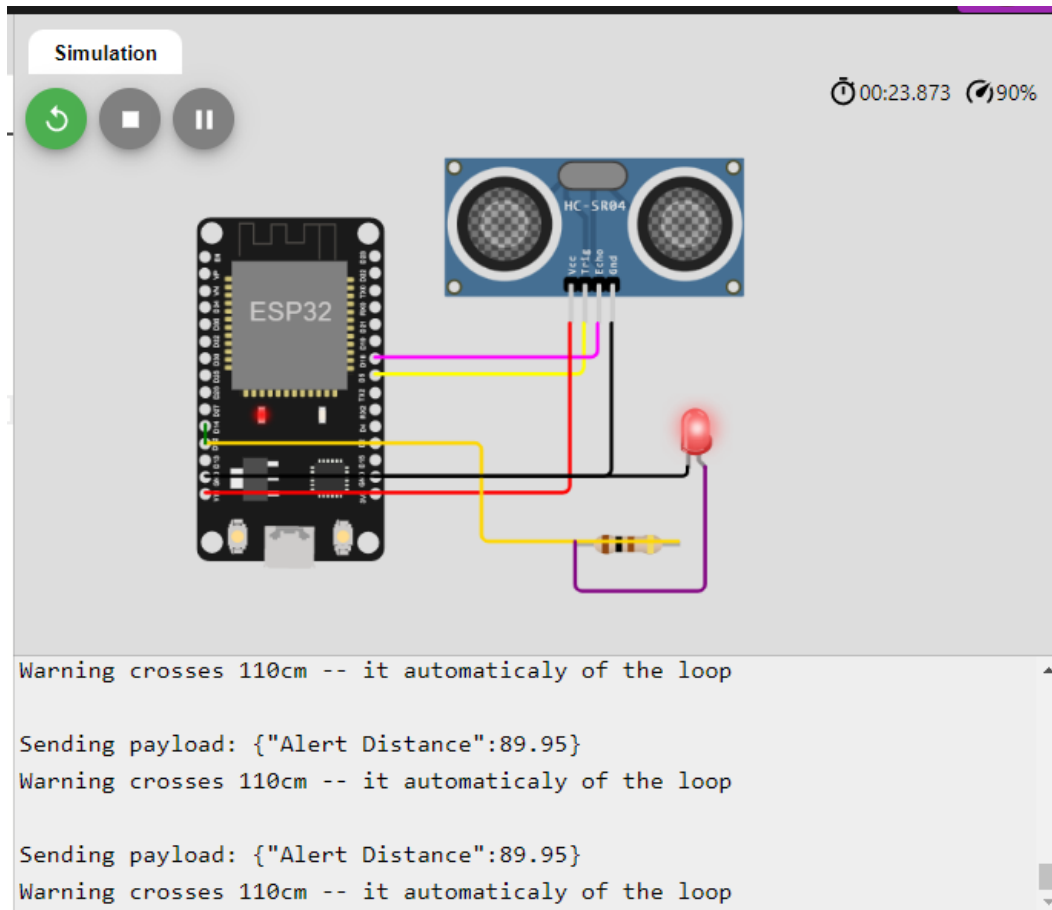
```

```

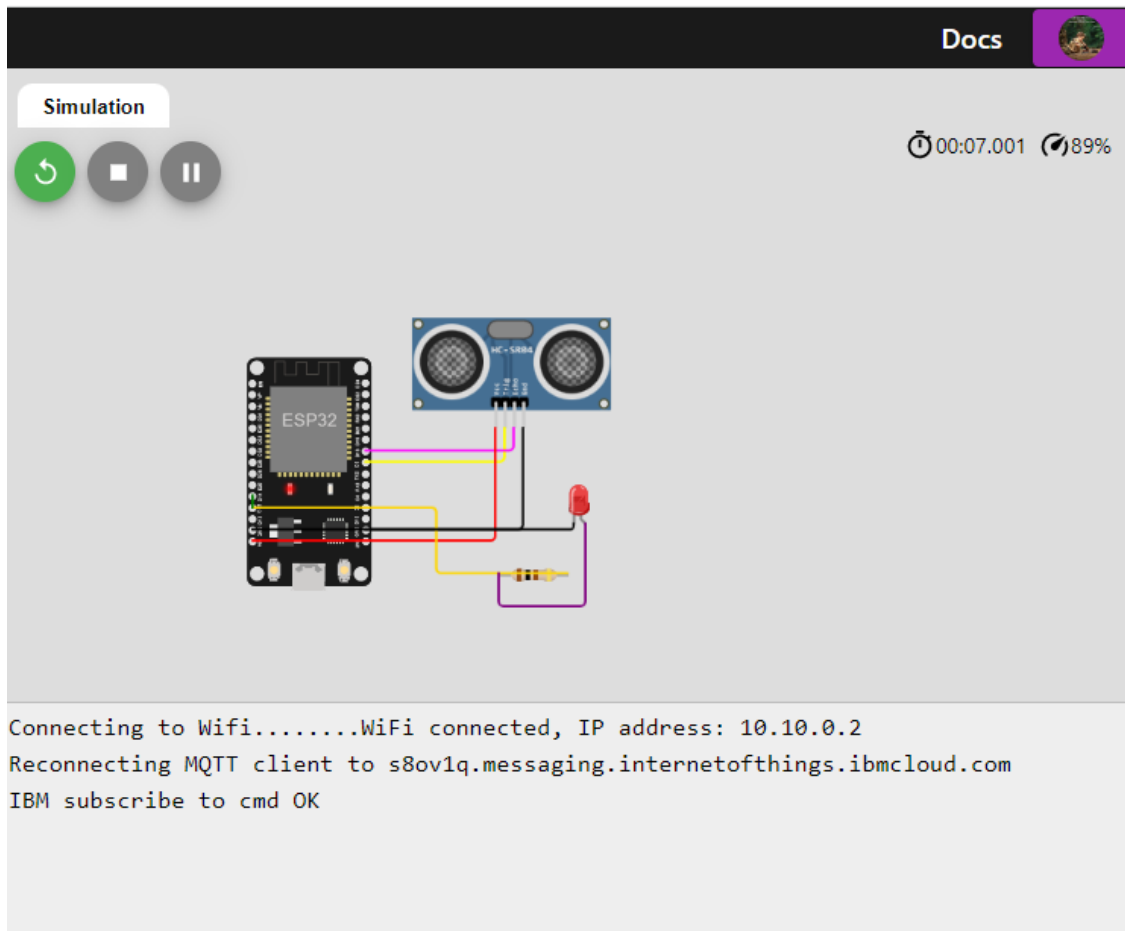
Serial.println("data:" + data3);
if(data3=="lighton"){
  Serial.println(data3);
  digitalWrite(led,HIGH);
}
data3="";
}

```

## OUTPUT





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



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

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	
▼ <input type="checkbox"/>	Akalya123	Connected	Akalya	Device	Nov 15, 2022 5:47 PM	→ ...
Identity    Device Information    Recent Events    State    Logs    ✕						
Device ID	Akalya123					
Device Type	Akalya					
Date Added	Nov 15, 2022 5:47 PM					
Added By	ishkutty0106@gmail.com					
Connection Status	<b>Connected</b> Connection Time: Nov 15, 2022 5:50 PM Client Address: 185.178.200.130 Insecure					

# IBM CLOUD OUTPUT

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	
▼	 Akalya123	 Connected	Akalya	Device	Nov 15, 2022 5:47 PM	→ ...
	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
Akalya	{"Alert Distance":89.95}	json	a few seconds ago
Akalya	{"Alert Distance":89.95}	json	a few seconds ago
Akalya	{"Alert Distance":89.95}	json	a few seconds ago
Akalya	{"Alert Distance":89.95}	json	a few seconds ago
Akalya	{"Alert Distance":89.95}	json	a few seconds ago

## WOKWI URL

<https://wokwi.com/projects/348395591964820050>