

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 "35hfjb"
#define DEVICE_TYPE "ganga"
#define DEVICE_ID "ganga123"
#define TOKEN "123456789"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/ganga/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:");

```

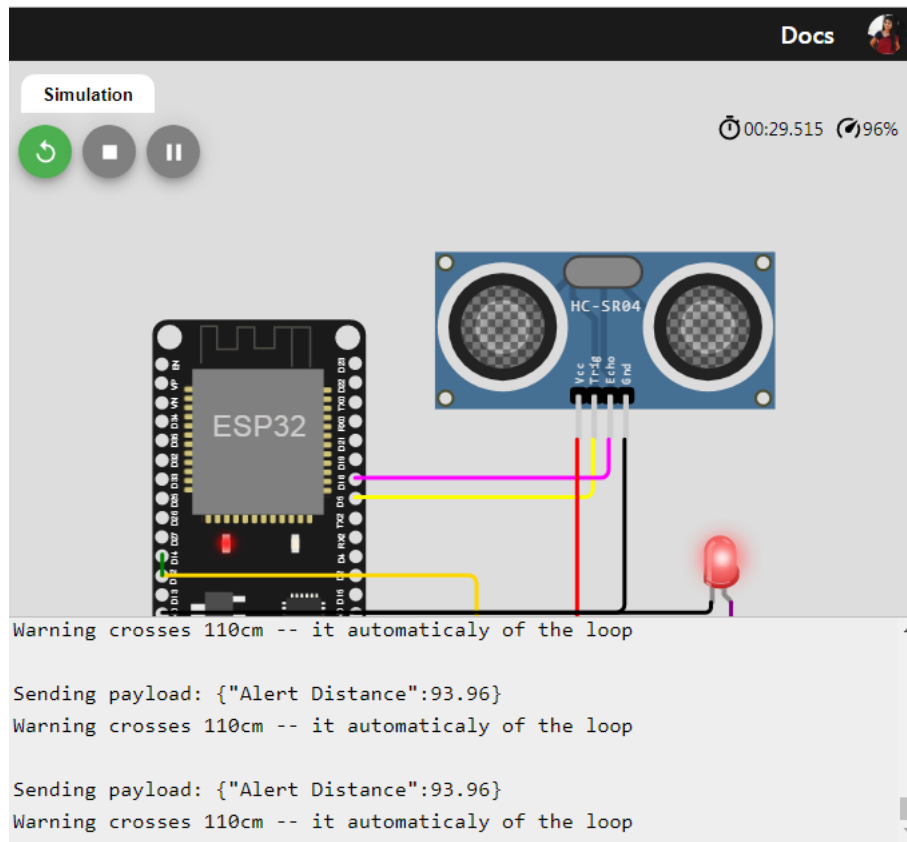
```

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="";
}

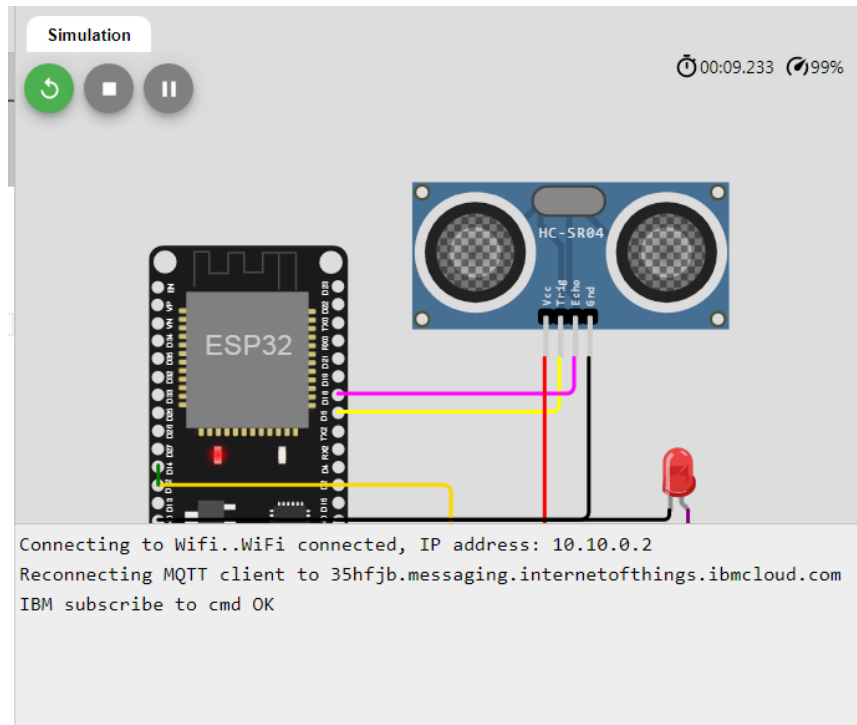
```

## OUTPUT

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



When Distance is greater than 100cm alert message will appear in the IBM CLOUD



on IoT Platform				
Browse Action Device Types Interfaces				
<input type="checkbox"/>	Device ID	Status	Device Type	Class ID
▼ <input type="checkbox"/>	ganga123	Connected	ganga	Device
Identity Device Information Recent Events State Logs				
Device ID		ganga123		
Device Type		ganga		
Date Added		Oct 29, 2022 11:47 AM		
Added By		gangaece02@gmail.com		
Connection Status		Connected		
		Connection Time: Oct 29, 2022 4:03 PM		
		Client Address: 145.40.94.93 Insecure		

IBM CLOUD OUTPUT

on IoT Platform

?

gangaece02@gmail.com  
ID: 35hfjb

Browse

Action

Device Types

Interfaces

Q

Add Device +

<input type="checkbox"/>	Device ID	Status	Device Type	Class ID	Date Added	
▼ <input type="checkbox"/>	ganga123	<span>Connected</span>	ganga	Device	Oct 29, 2022 11:47 AM	→ ...

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
ganga	{"Alert Distance":93.96}	json	a few seconds ago
ganga	{"Alert Distance":93.96}	json	a few seconds ago
ganga	{"Alert Distance":93.96}	json	a few seconds ago
ganga	{"Alert Distance":93.96}	json	a few seconds ago
ganga	{"Alert Distance":93.96}	json	a few seconds ago

<https://wokwi.com/projects/346848406407217747>