Assignment-4

Date	24 October 2022
Name	Vetri Vignesh A
Roll Number	620119106103
Team ID	PNT2022TMID30898
Project Name	Project – Personal Assistance for seniors who are self-reliant

Question :

Write code and connections in wokwi for ultrasonic sensors. That 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.

Wokwi:

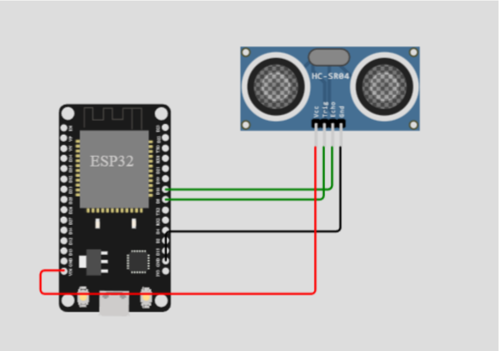
https://wokwi.com/projects/348217160152121939

Code:

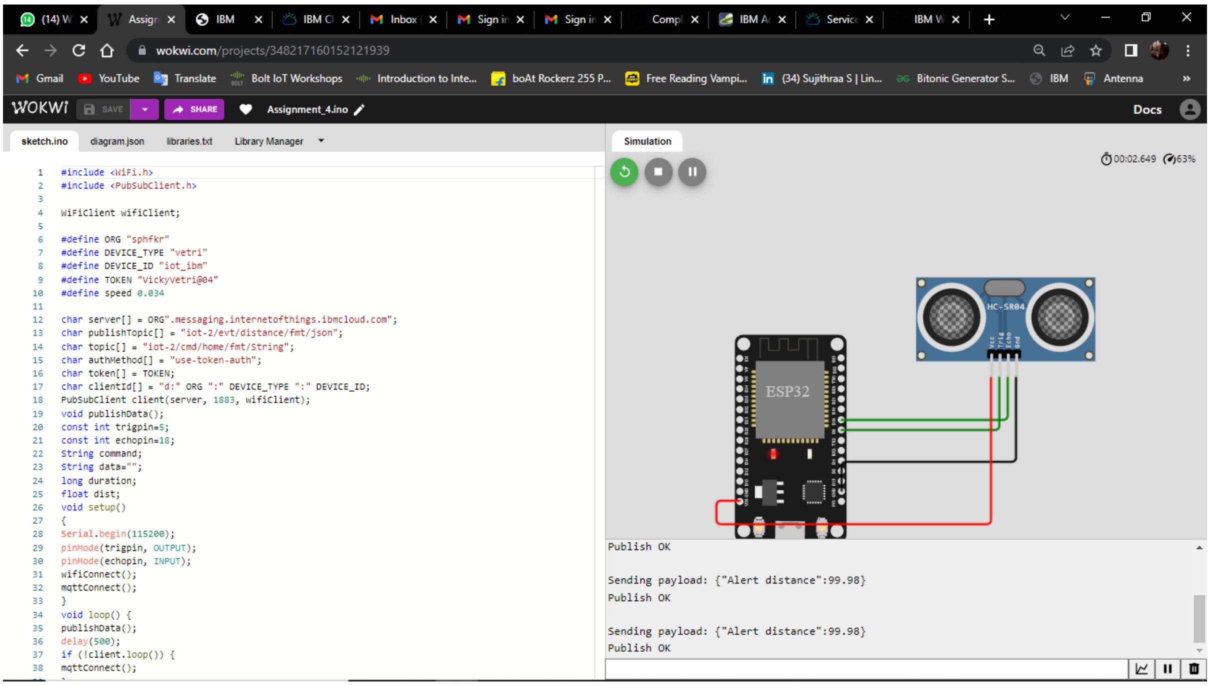
```
#include <WiFi.h>
#include <PubSubClient.h>

WiFiClient wifiClient;

#define ORG "sphfkr"
#define DEVICE_TYPE "vetri"
#define DEVICE_ID "iot_ibm"
#define TOKEN "VickyVetri@04"
#define speed 0.034

char server[] = ORG".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/distance/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(trigpin, OUTPUT);
pinMode(echopin, INPUT);
```

```
wifiConnect();
mqttConnect();
}
void loop() {
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("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("Publish OK");
} else {
Serial.println("Publish FAILED");
}
}
}
```

Diagram:



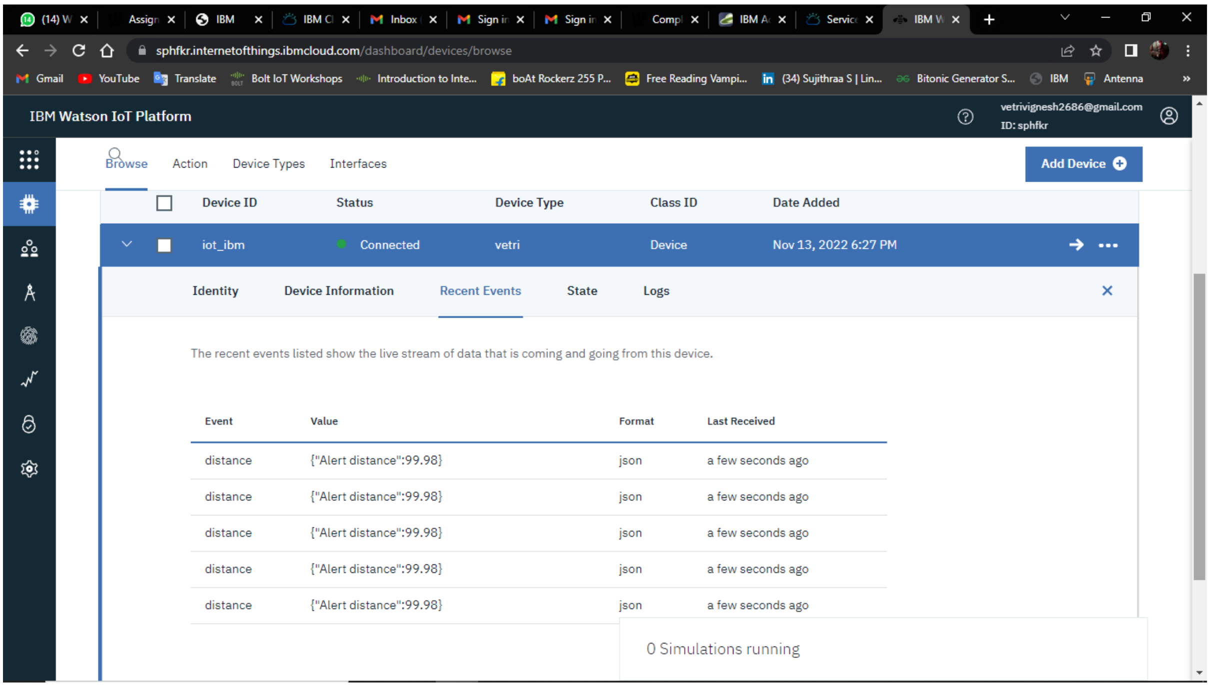
Wokwi Output:



```
#include <WiFi.h>
#include <PubSubClient.h>

WiFiClient wifiClient;

#define ORG "sphfkr"
#define DEVICE_TYPE "vetri"
#define DEVICE_ID "iot_ibm"
#define TOKEN "VickyVetri@04"
#define speed 0.034

char server[] = ORG".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/distance/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(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();
mqttConnect();
}
void loop() {
publishData();
delay(500);
if (!client.loop()) {
mqttConnect();
```

```
Publish OK

Sending payload: {"Alert distance":99.98}
Publish OK

Sending payload: {"Alert distance":99.98}
Publish OK
```

IBM cloud output:



Device ID	Status	Device Type	Class ID	Date Added
iot_ibm	● Connected	vetri	Device	Nov 13, 2022 6:27 PM

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

Event	Value	Format	Last Received
distance	{"Alert distance":99.98}	json	a few seconds ago
distance	{"Alert distance":99.98}	json	a few seconds ago
distance	{"Alert distance":99.98}	json	a few seconds ago
distance	{"Alert distance":99.98}	json	a few seconds ago
distance	{"Alert distance":99.98}	json	a few seconds ago