Assignment -4

Assignment	4
Team ID	PNT2022TMID51070
Domain	Internet Of Things
Maximum Marks	2 Marks

Question-1:

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

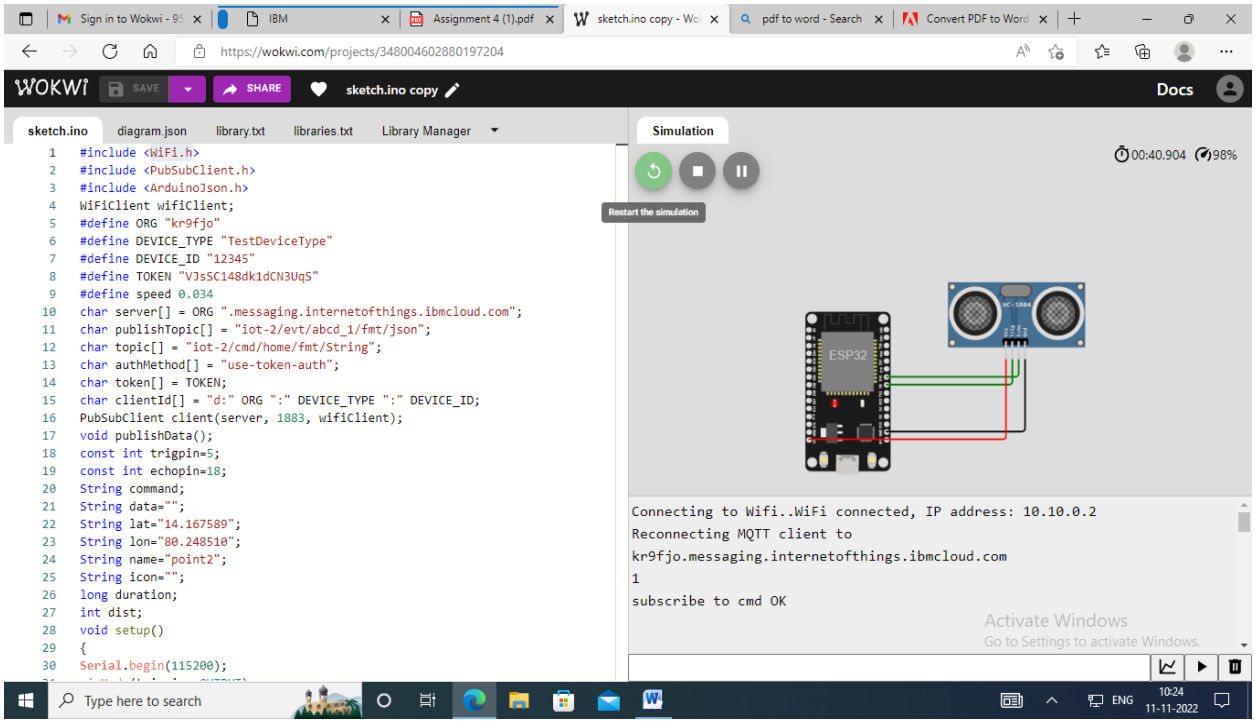
Program:

```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>
WiFiClient wifiClient;
#define ORG "kr9fjo"
#define DEVICE_TYPE "TestDeviceType"
#define DEVICE_ID "12345"
#define TOKEN "VJsSC148dk1dCN3UqS"
#define speed 0.034
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/abcd_1/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="";
String lat="14.167589";
```

```
String lon="80.248510";
String name="point2";
String icon="";
long duration;
int 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(1000);
}
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){
dist=100-dist;
icon="fa-trash";
}else{
dist=0;
icon="fa-trash-o";
}DynamicJsonDocument doc(1024);
String payload;
doc["Name"]=name;
doc["Latitude"]=lat;
doc["Longitude"]=lon;
doc["Icon"]=icon;
doc["FillPercent"]=dist;
serializeJson(doc, payload);
delay(3000);
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");
}
}
```

Output:


https://wokwi.com/projects/348004602880197204
WOKWI
SAVE
SHARE
sketch.ino copy
Docs
sketch.ino
diagram.json
library.txt
libraries.txt
Library Manager
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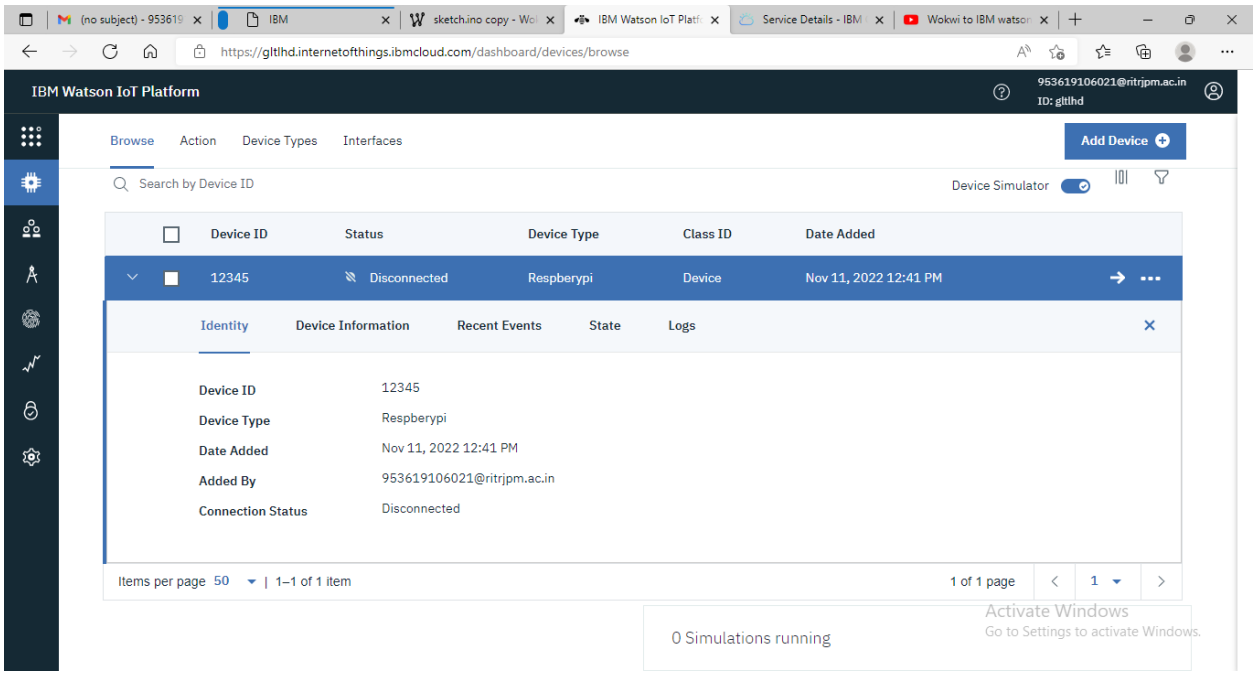
String lat="14.167589";
String lon="80.248510";
String name="point2";
String icon="";
long duration;
int dist;
void setup()
{
Serial.begin(115200);
Simulation
Restart the simulation
00:40.904
98%
ESP32
Connecting to Wifi..WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to
kr9fjo.messaging.internetofthings.ibmcloud.com
1
subscribe to cmd OK
Activate Windows
Go to Settings to activate Windows.
Type here to search
ENG
10:24
11-11-2022


https://gltlhd.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
953619106021@ritrjpm.ac.in
ID: gltlhd
Browse
Action
Device Types
Interfaces
Add Device
Search by Device ID
Device Simulator
Device ID
Status
Device Type
Class ID
Date Added
12345
Disconnected
Respberypi
Device
Nov 11, 2022 12:41 PM
Identity
Device Information
Recent Events
State
Logs
Device ID 12345
Device Type Respberypi
Date Added Nov 11, 2022 12:41 PM
Added By 953619106021@ritrjpm.ac.in
Connection Status Disconnected
Items per page 50
1–1 of 1 item
1 of 1 page
1
0 Simulations running
Activate Windows
Go to Settings to activate Windows.