Assignment -4

Assignment Date	1 November 2022
Student Name	Devakumar M
Student Roll Number	611219106011
Maximum Marks	2 Marks

Question-1:

Write code and connections in wokwi for ultrasonic sensor. Whenever distance is less than 100 cm send "alert" to IBM cloud and display in device recent events.

WOWKI LINK:

https://wokwi.com/projects/347100965235589716

Solution:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "7p0rf0"
#define DEVICE_TYPE "Assignment-4"
#define DEVICE_ID "DevaID"
#define TOKEN "mNtFhKk30NLcFX653!"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/manimd/fmt/json";
char topic[] = "iot-2/cmd/led/fmt/String";
char authMethod[] = "use-token-auth";
char token[] = TOKEN;
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);



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()
{
```

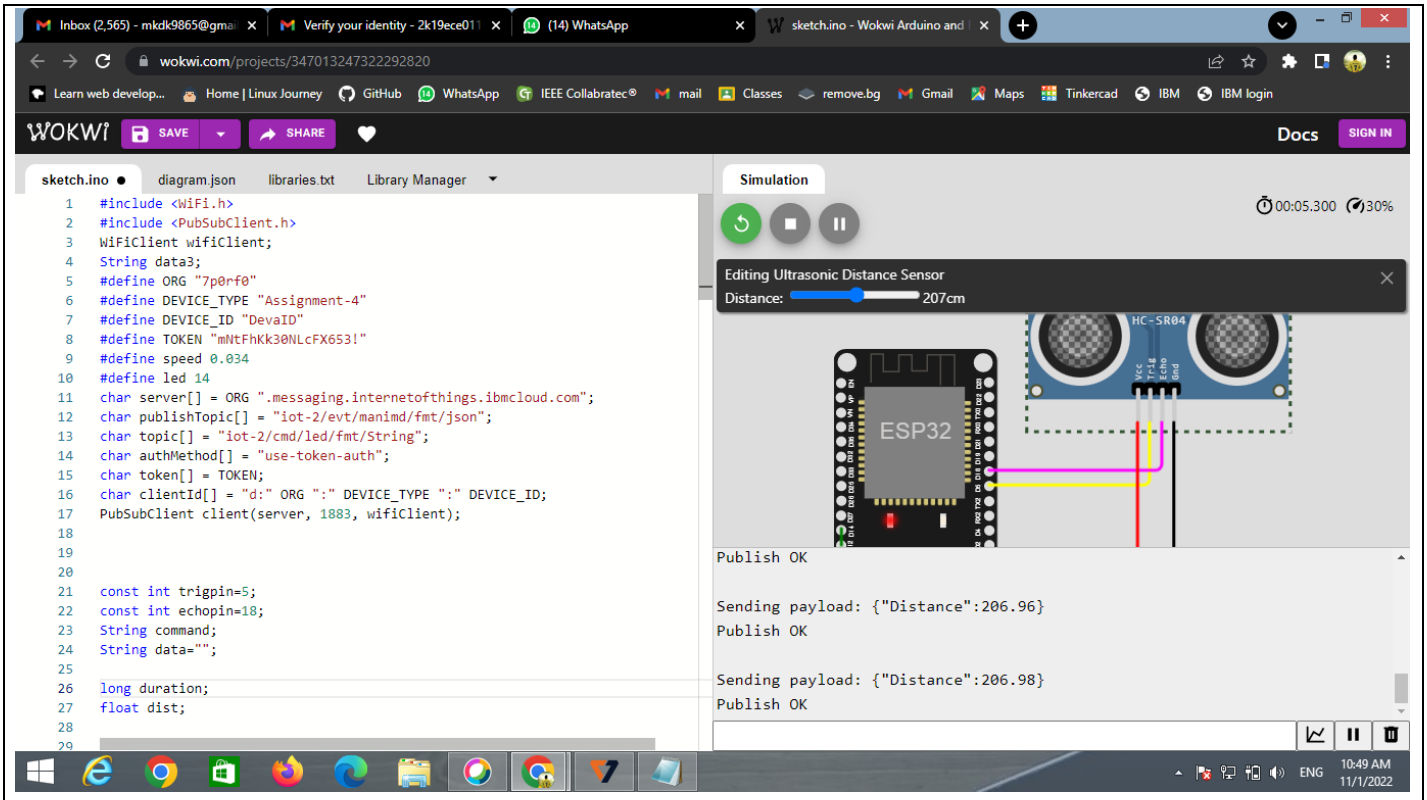
```
 digitalWrite(trigpin,LOW);
 digitalWrite(trigpin,HIGH);
 delayMicroseconds(10);
 digitalWrite(trigpin,LOW);
 duration=pulseIn(echopin,HIGH);
 dist=duration*speed/2;
 if(dist<100){
   String payload = "{\"Alert Distance\":";
   payload += dist;
   payload += "}";

   Serial.print("\n");
   Serial.print("Sending payload: ");
   Serial.println(payload);
   if (client.publish(publishTopic, (char*) payload.c_str())) {
Serial.println("Publish OK");
   }else {
     Serial.println("Publish FAILED");
   }

 }


 }
```

Output:


wokwi.com/projects/347013247322292820
WOKWI
SAVE
SHARE
Docs
SIGN IN
sketch.ino
diagram.json
libraries.txt
Library Manager
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "7p0rf0"
#define DEVICE_TYPE "Assignment-4"
#define DEVICE_ID "DevaID"
#define TOKEN "mNtFhKk30NLcFX653!"
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#define led 14
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char publishTopic[] = "iot-2/evt/manimd/fmt/json";
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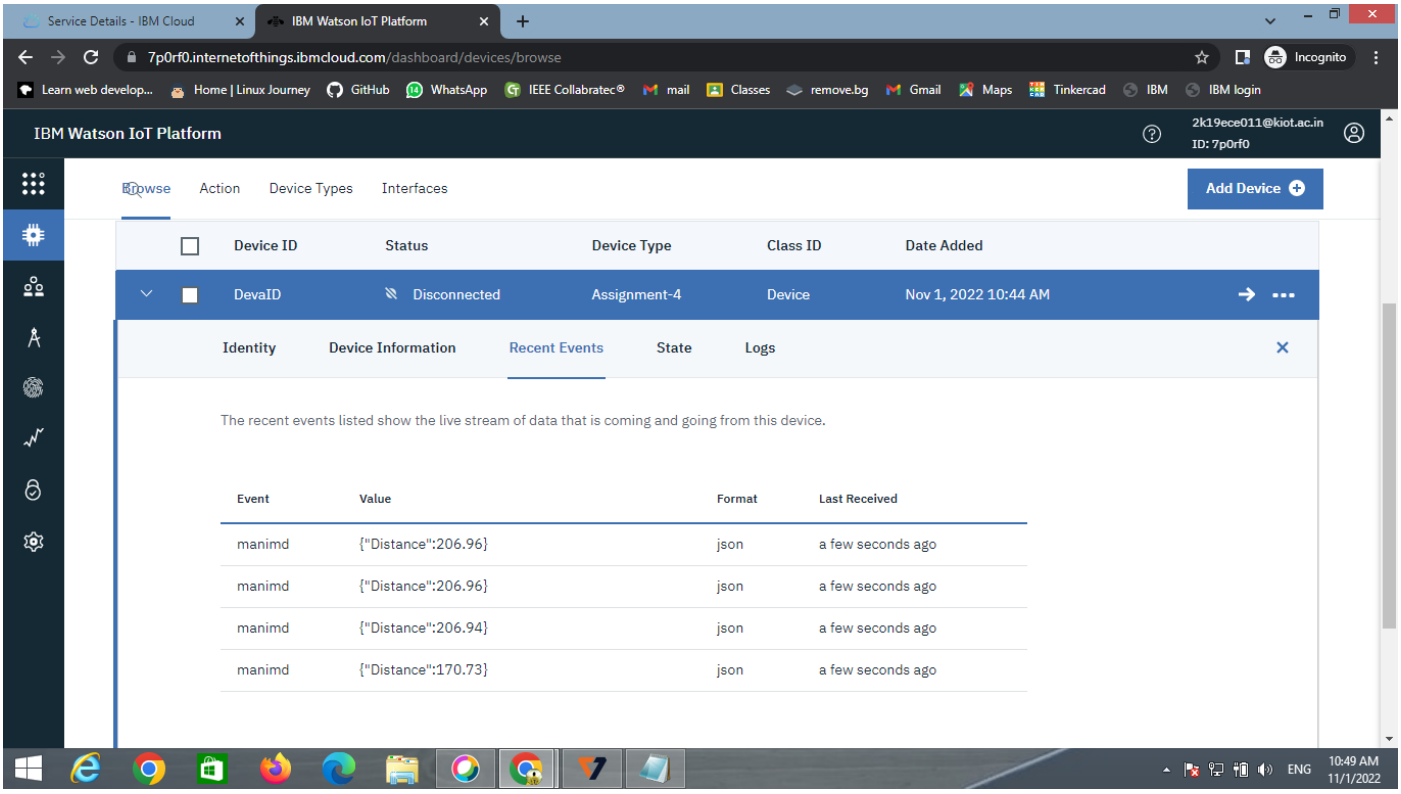
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);
const int trigpin=5;
const int echopin=18;
String command;
String data="";
long duration;
float dist;
Simulation
00:05.300
30%
Editing Ultrasonic Distance Sensor
Distance:
207cm
HC-SR04
ESP32
Publish OK
Sending payload: {"Distance":206.96}
Publish OK
Sending payload: {"Distance":206.98}
Publish OK
ENG
10:49 AM
11/1/2022


Service Details - IBM Cloud
IBM Watson IoT Platform
7p0rf0.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
2k19ece011@kiot.ac.in
ID: 7p0rf0
Browse
Action
Device Types
Interfaces
Add Device
Device ID
Status
Device Type
Class ID
Date Added
DevaID
Disconnected
Assignment-4
Device
Nov 1, 2022 10:44 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
manimd
{"Distance":206.96}
json
a few seconds ago
manimd
{"Distance":206.96}
json
a few seconds ago
manimd
{"Distance":206.94}
json
a few seconds ago
manimd
{"Distance":170.73}
json
a few seconds ago
ENG
10:49 AM
11/1/2022