ASSIGNMENT-4

Assignment Date	27 october 2022
Student Name	S SARANYA
Student Roll Number	711619104043
Maximum Marks	2 Marks

QUESTION:

Write code and connections in wokwi for ultrasonic sensor. 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 of ibm cloud.

SOLUTION:

PROGRAM:

```
#include <WiFi.h>

#include <PubSubClient.h>

WiFiClient wifiClient;

String data3;

#define ORG "5ri8rv"

#define DEVICE_TYPE "abcd"

#define DEVICE_ID "efgh"

#define TOKEN "987654321"

#define speed 0.034

#define led 14

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";

char publishTopic[] = "iot-2/evt/Data/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 = "{\"Normal 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");
    }

  }
    if(dist>101 && dist<111){
    String payload = "{\"Alert distance\":";
    payload += dist;
    payload += "}";

    Serial.print("\n");
    Serial.print("Sending payload: ");
```

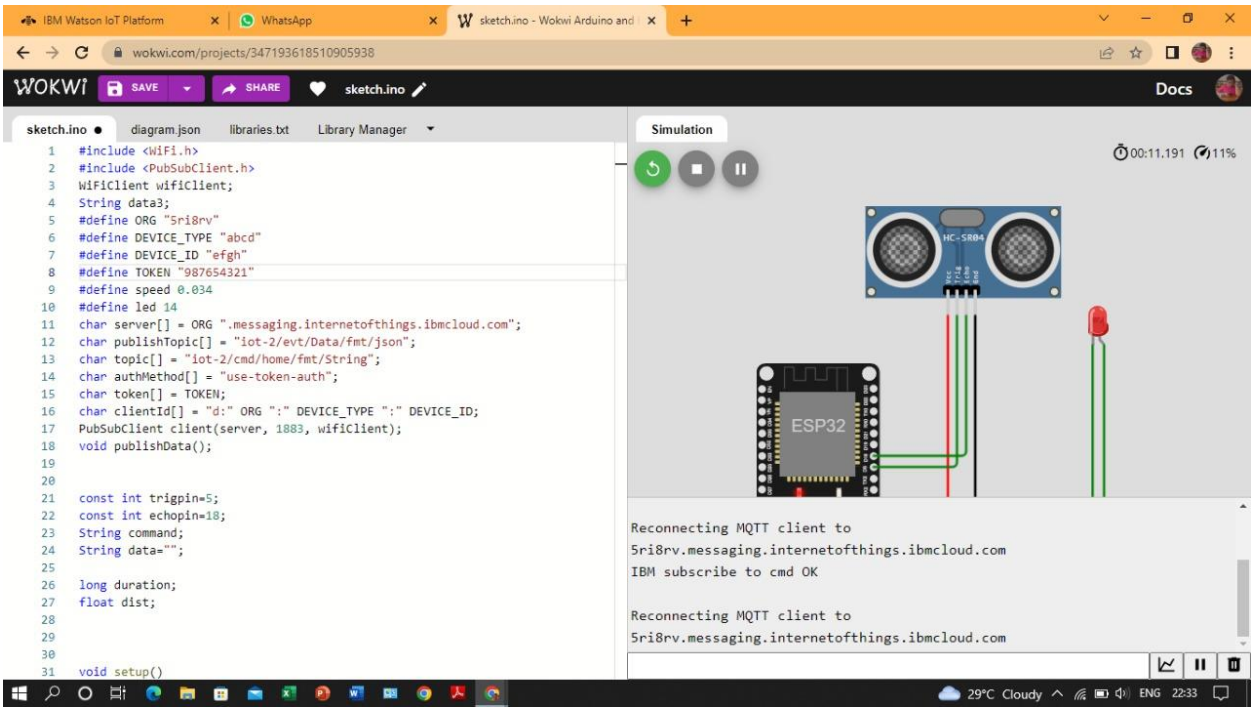
```
   Serial.println(payload);
    if(client.publish(publishTopic, (char*) payload.c_str())) {
     Serial.println("Warning crosses 110cm -- it automaticaly of the loop");
     digitalWrite(led,HIGH);
   }else {
     Serial.println("Publish FAILED");
   }


  }



  }
  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="";
}
```

SIMULATION SCREENSHOTS:


IBM Watson IoT Platform
WhatsApp
sketch.ino - Wokwi Arduino and
wokwi.com/projects/347193618510905938
WOKWI
SAVE
SHARE
sketch.ino
Docs
sketch.ino
diagram.json
libraries.txt
Library Manager
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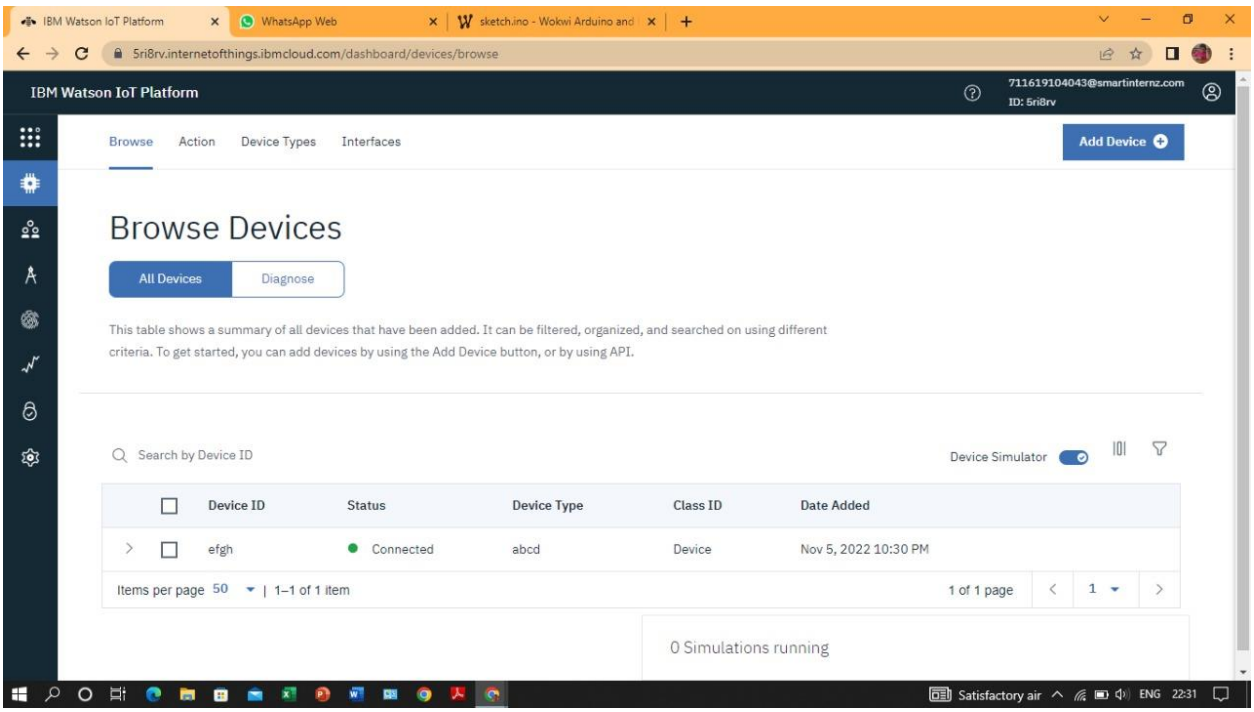
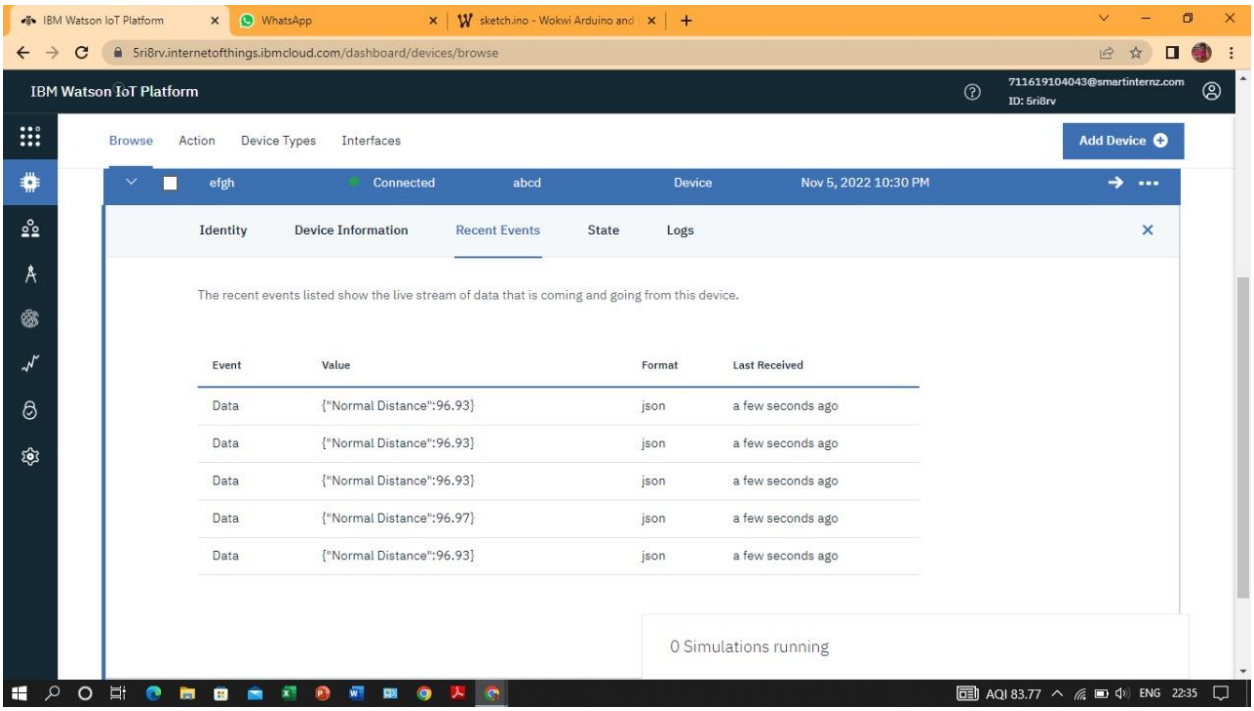
const int echopin=18;
String command;
String data="";
long duration;
float dist;
void setup()
Simulation
00:11.191
11%
HC-SR04
ESP32
Reconnecting MQTT client to
5ri8rv.messaging.internetofthings.ibmcloud.com
IBM subscribe to cmd OK
Reconnecting MQTT client to
5ri8rv.messaging.internetofthings.ibmcloud.com
29°C Cloudy
ENG
22:33


IBM Watson IoT Platform
WhatsApp Web
sketch.ino - Wokwi Arduino and
5ri8rv.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
711619104043@smartinternz.com
ID: 5ri8rv
Browse
Action
Device Types
Interfaces
Add Device
Browse Devices
All Devices
Diagnose
This table shows a summary of all devices that have been added. It can be filtered, organized, and searched on using different criteria. To get started, you can add devices by using the Add Device button, or by using API.
Search by Device ID
Device Simulator
Device ID
Status
Device Type
Class ID
Date Added
efgh
Connected
abcd
Device
Nov 5, 2022 10:30 PM
Items per page 50
1–1 of 1 item
1 of 1 page
1
0 Simulations running
Satisfactory air
ENG
22:31



WOKWI LINK:

https://wokwi.com/projects/347193618510905938