Assignment -4

Assignment Date	24 October 2022
Student Name	Mr.Arul Prakasam
Student Roll Number	412719106003
Team ID	PNT2022TMID38376

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

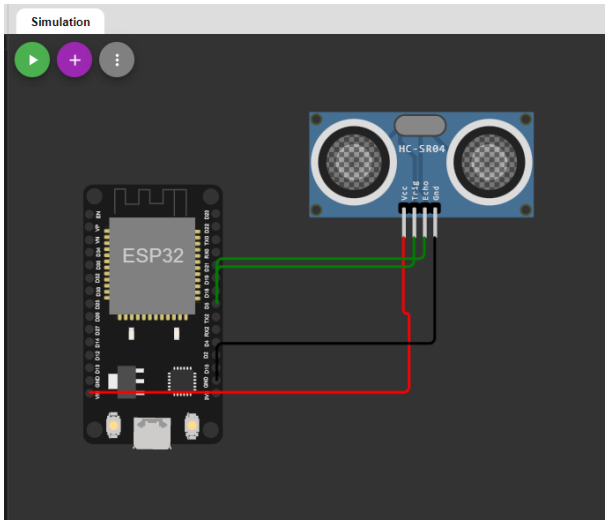
Code:

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

WiFiClient wifiClient;

#define ORG "pcig8v"
#define DEVICE_TYPE "Arul"
#define DEVICE_ID "2002"
#define TOKEN "123456789"
#define speed 0.034

char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/raspberrypi_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="";
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");
  }
}
```

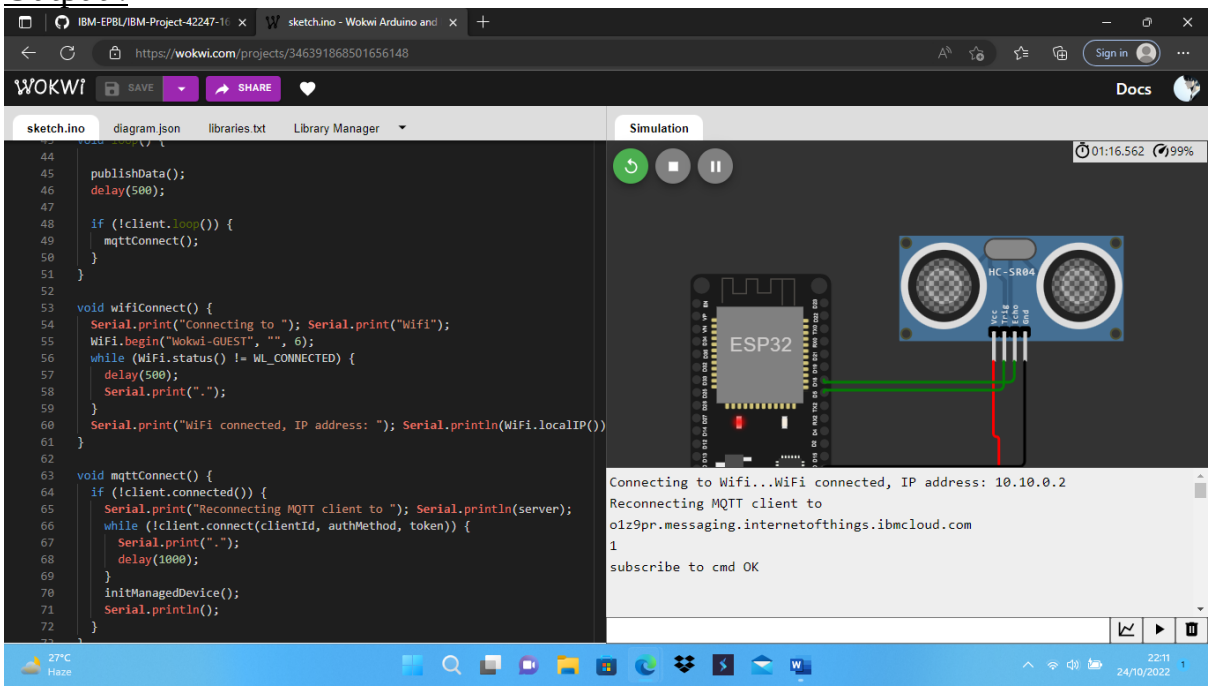
Diagram :

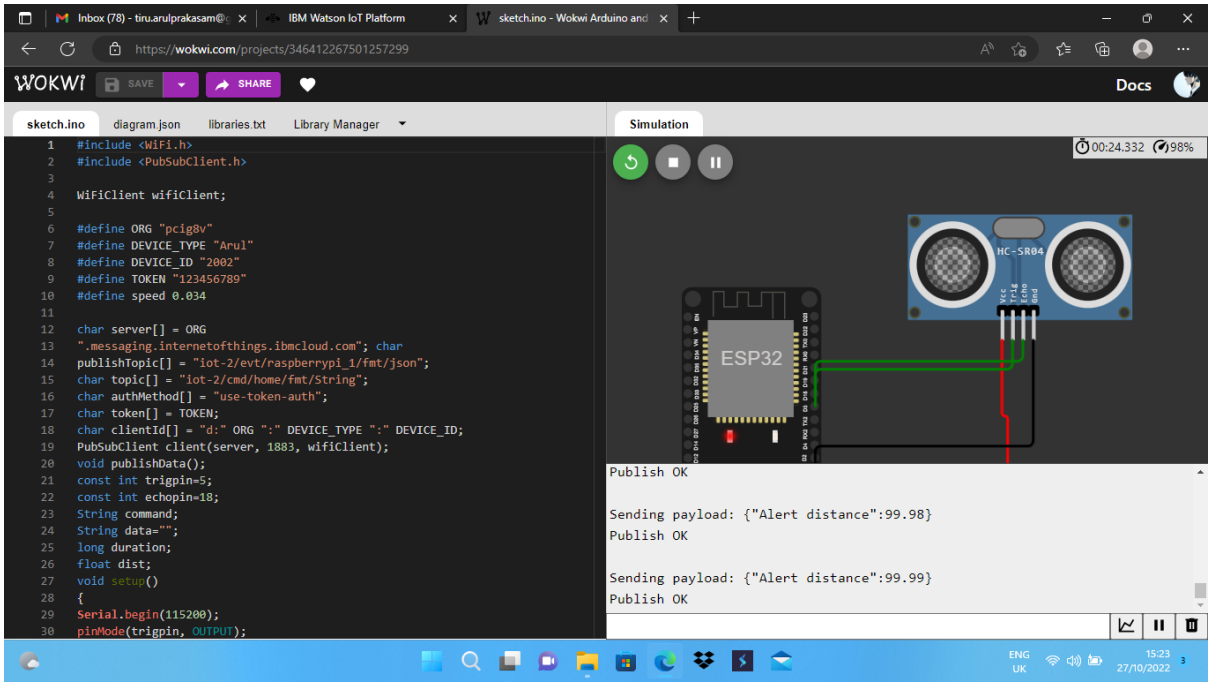


Wokwi link :

https://wokwi.com/projects/346391868501656148

Output :




Inbox (78) - tiru.arulprakasam@
IBM Watson IoT Platform
sketch.ino - Wokwi Arduino and
https://wokwi.com/projects/346412267501257299
WOKWI
SAVE
SHARE
Docs
sketch.ino
diagram.json
libraries.txt
Library Manager
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
#define ORG "pcig8v"
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publishTopic[] = "iot-2/evt/raspberrypi_1/fmt/json";
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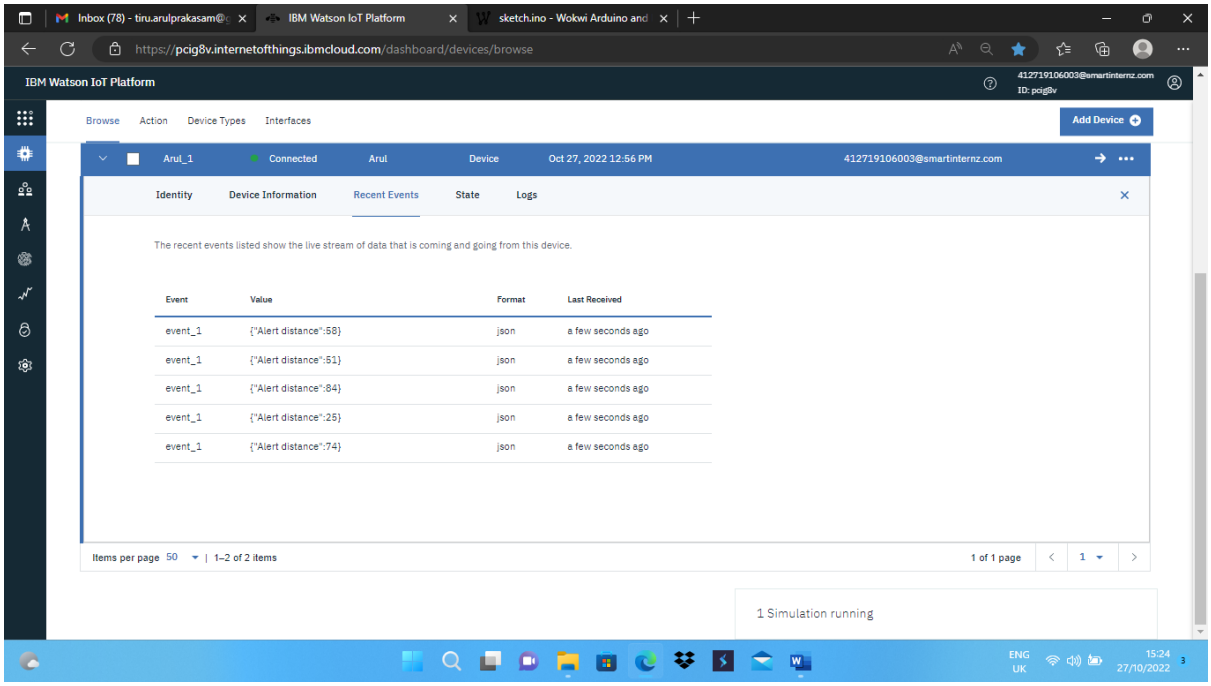
PubSubClient client(server, 1883, wifiClient);
void publishData();
const int trigpin=5;
const int echopin=18;
String command;
String data="";
long duration;
float dist;
void setup()
{
Serial.begin(115200);
pinMode(trigpin, OUTPUT);
Simulation
00:24.332
98%
HC-SR04
ESP32
Publish OK
Sending payload: {"Alert distance":99.98}
Publish OK
Sending payload: {"Alert distance":99.99}
Publish OK
ENG
UK
15:23
27/10/2022


Inbox (78) - tiru.arulprakasam@
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sketch.ino - Wokwi Arduino and
https://pcig8v.internetofthings.ibmcloud.com/dashboard/devices/browse
IBM Watson IoT Platform
412719106003@smartinternz.com
ID: pcig8v
Browse
Action
Device Types
Interfaces
Add Device
Arul_1
Connected
Arul
Device
Oct 27, 2022 12:56 PM
412719106003@smartinternz.com
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
event_1
{"Alert distance":58}
json
a few seconds ago
event_1
{"Alert distance":51}
json
a few seconds ago
event_1
{"Alert distance":84}
json
a few seconds ago
event_1
{"Alert distance":25}
json
a few seconds ago
event_1
{"Alert distance":74}
json
a few seconds ago
Items per page 50
1–2 of 2 items
1 of 1 page
1
1 Simulation running
ENG
UK
15:24
27/10/2022