

ASSIGNMENT – 4

WOKWI SIMULATION

Assignment Date	7th November 2022
Student Name	Athira I
Student Roll Number	960219106045
Maximum Marks	2 Marks

Question-1:

Write a code and make a connection in WOKWI for ultrasonic sensor.
Whenever distance is less than 100 , send “alert” to IBM cloud and display in device recent events.

Program:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "p2hi7v"
#define DEVICE_TYPE "Athirai24"
#define DEVICE_ID "960219106045-2403"
#define TOKEN "9602191060-45"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Athira/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");
}

}

if(dist>100){
String payload = "{\"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 SIMULATION

WOKWI SAVE SHARE sketch.ino Docs

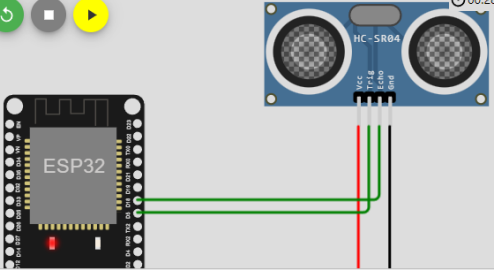
sketch.ino diagram.json libraries.txt Library Manager

```

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24 float dist;
25 void setup()
26 {
27   Serial.begin(115200);
28   pinMode(led, OUTPUT);
29   pinMode(trigpin, OUTPUT);

```

Simulation



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Sending payload: {"Distance":146.96}
Publish OK

Sending payload: {"Distance":146.98}
Publish OK

Sending payload: {"Distance":146.98}
Publish OK

Type here to search

When Distance > 100 :

WOKWI SAVE SHARE sketch.ino Docs

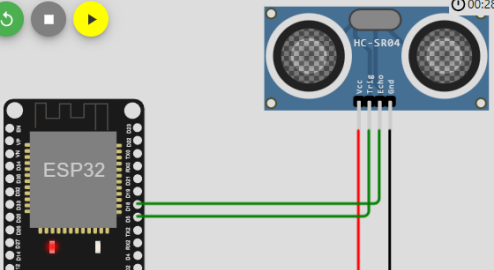
sketch.ino diagram.json libraries.txt Library Manager

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Simulation



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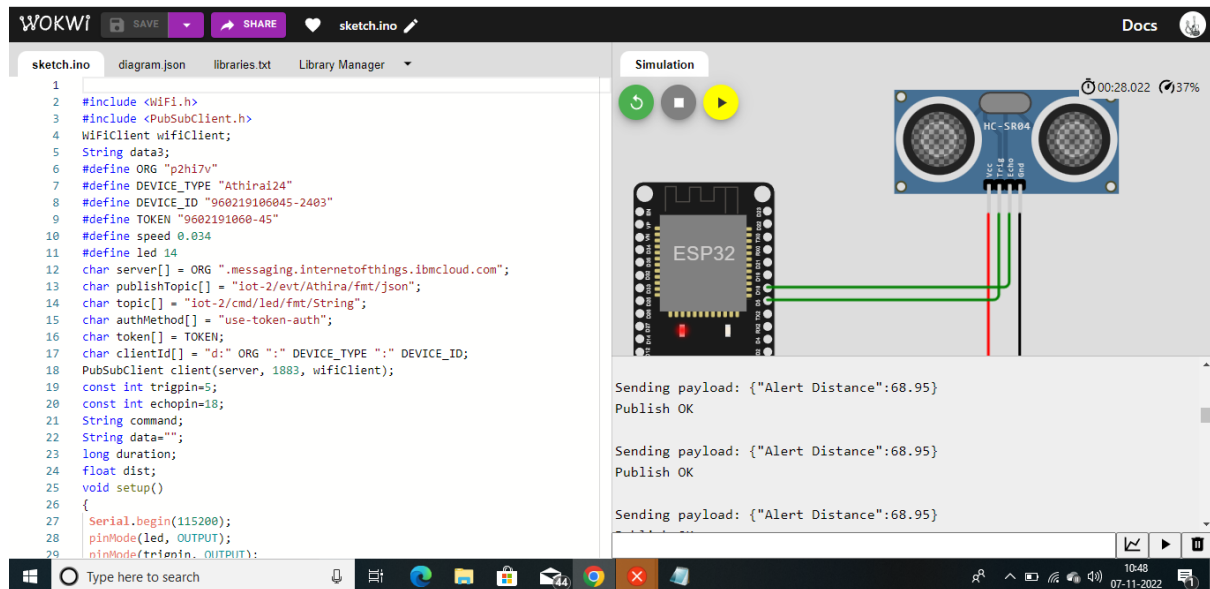
Sending payload: {"Distance":399.96}
Publish OK

Sending payload: {"Distance":399.96}
Publish OK

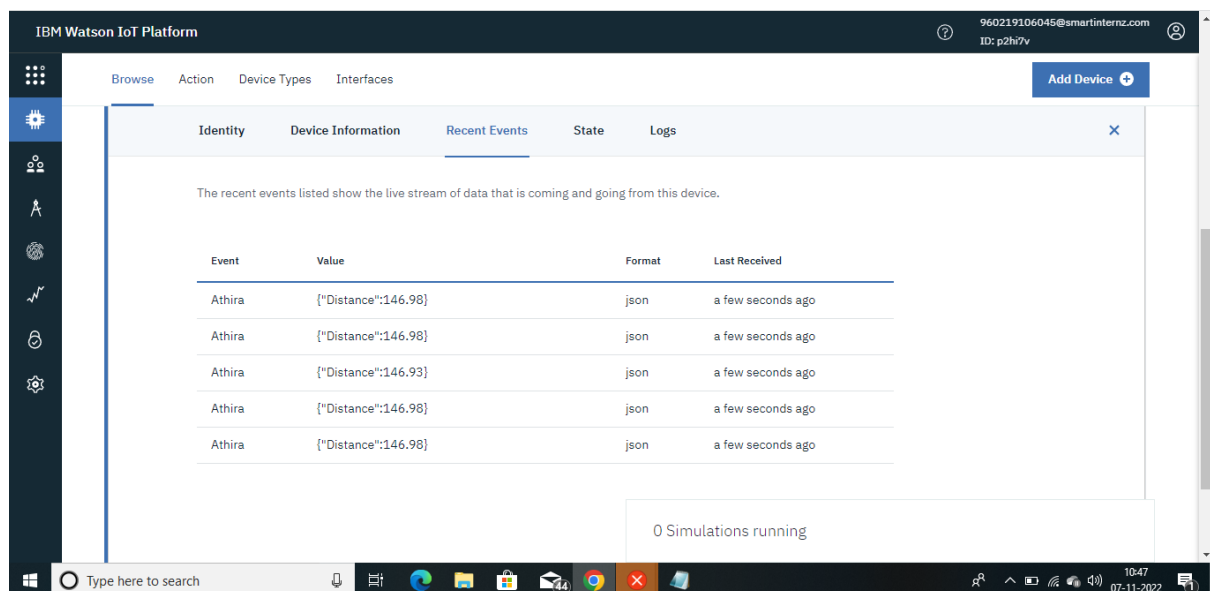
Sending payload: {"Distance":399.96}
Publish OK

Type here to search

When Distance < 100 :



IBM CLOUD OUTPUT :



WOKWI LINK :

<https://wokwi.com/projects/347644347714372179>