Assignment -4

WOWKI SIMULATION

Assignment Date	4th NOVEMBER 2022
Student Name	Aiswarya.S
Student Roll Number	960219106011
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.

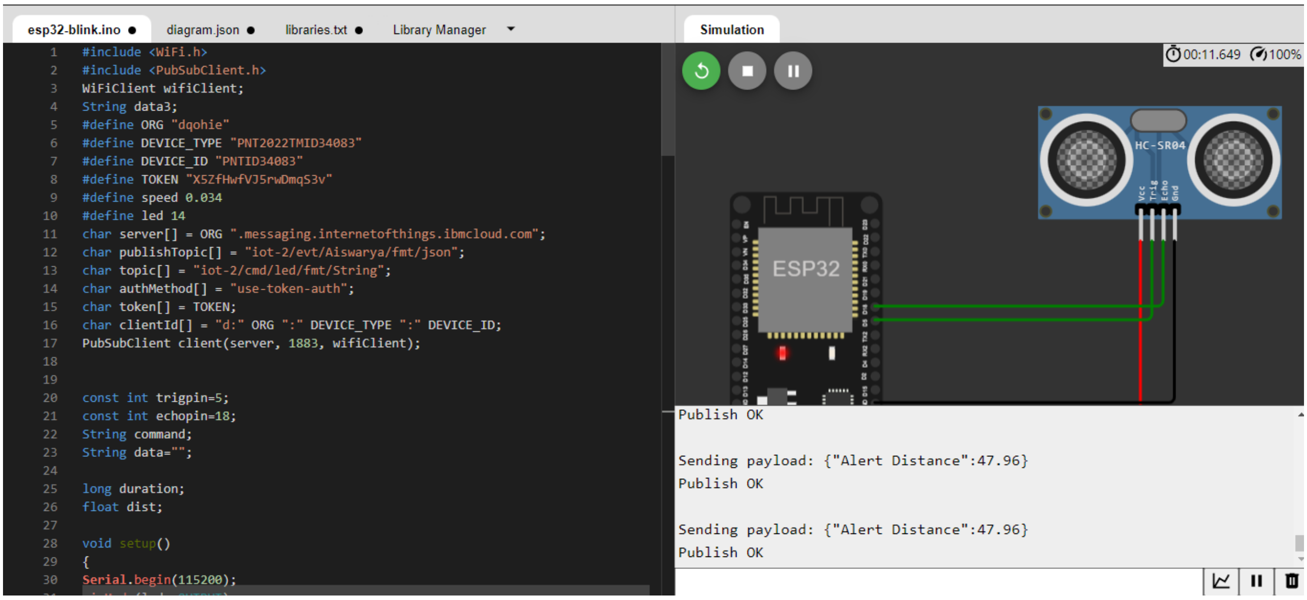
PROGRAM

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient;
String data3;
#define ORG "2t8zs3"
#define DEVICE_TYPE "b11m3e-device" #define
DEVICE_ID "11111111deviceid"
#define TOKEN "2*kzBuumHxd+BeL*H)"
#define speed 0.034  #define led 14 char server[] = ORG
".messaging.internetofthings.ibmcloud.com"; char publishTopic[] =
"iot-2/evt/Amrin/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:

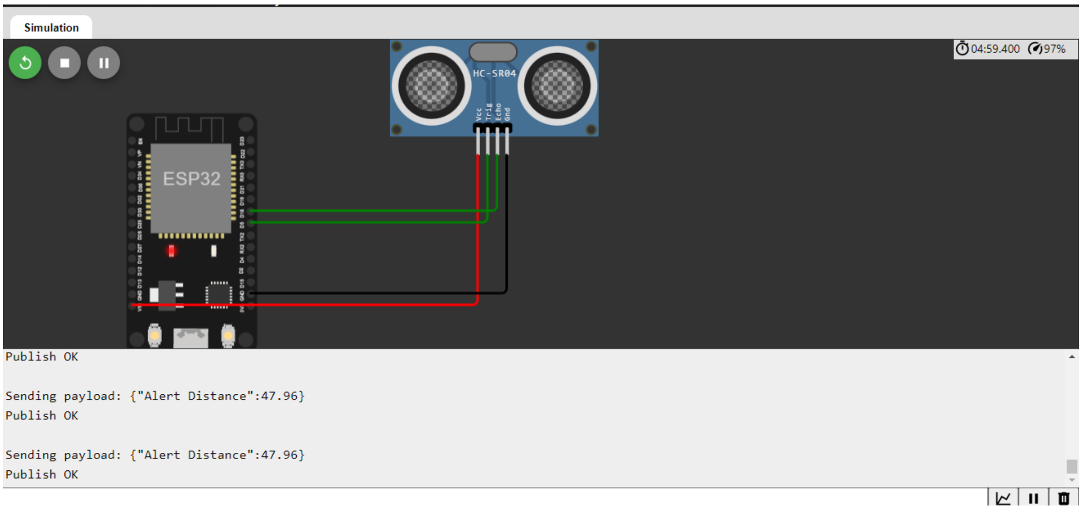
WOKWI SIMULATION



```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "dqohie"
#define DEVICE_TYPE "PNT2022TMID34083"
#define DEVICE_ID "PNTID34083"
#define TOKEN "X5ZfHwfVJ5rwDmqS3v"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/Aiswarya/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);
```

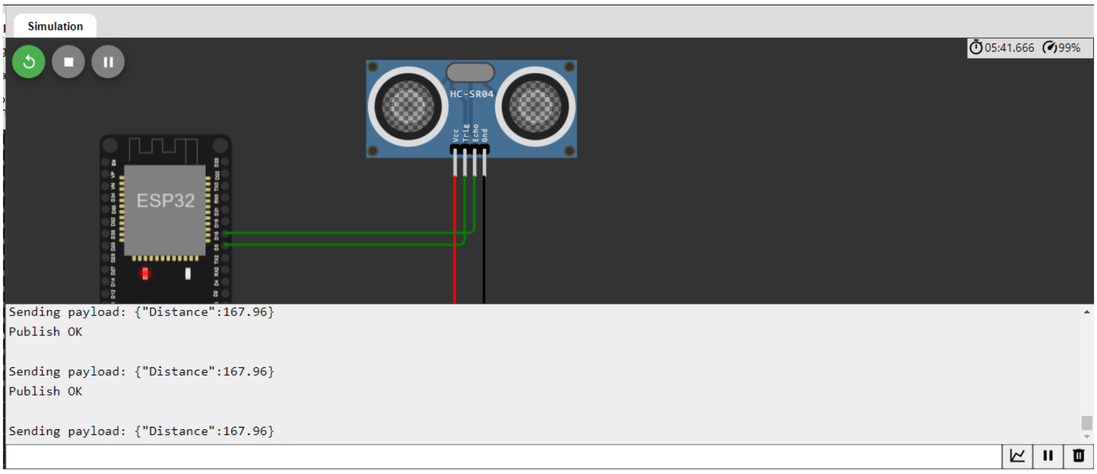
```
Publish OK

Sending payload: {"Alert Distance":47.96}
Publish OK

Sending payload: {"Alert Distance":47.96}
Publish OK
```

When distance<100:



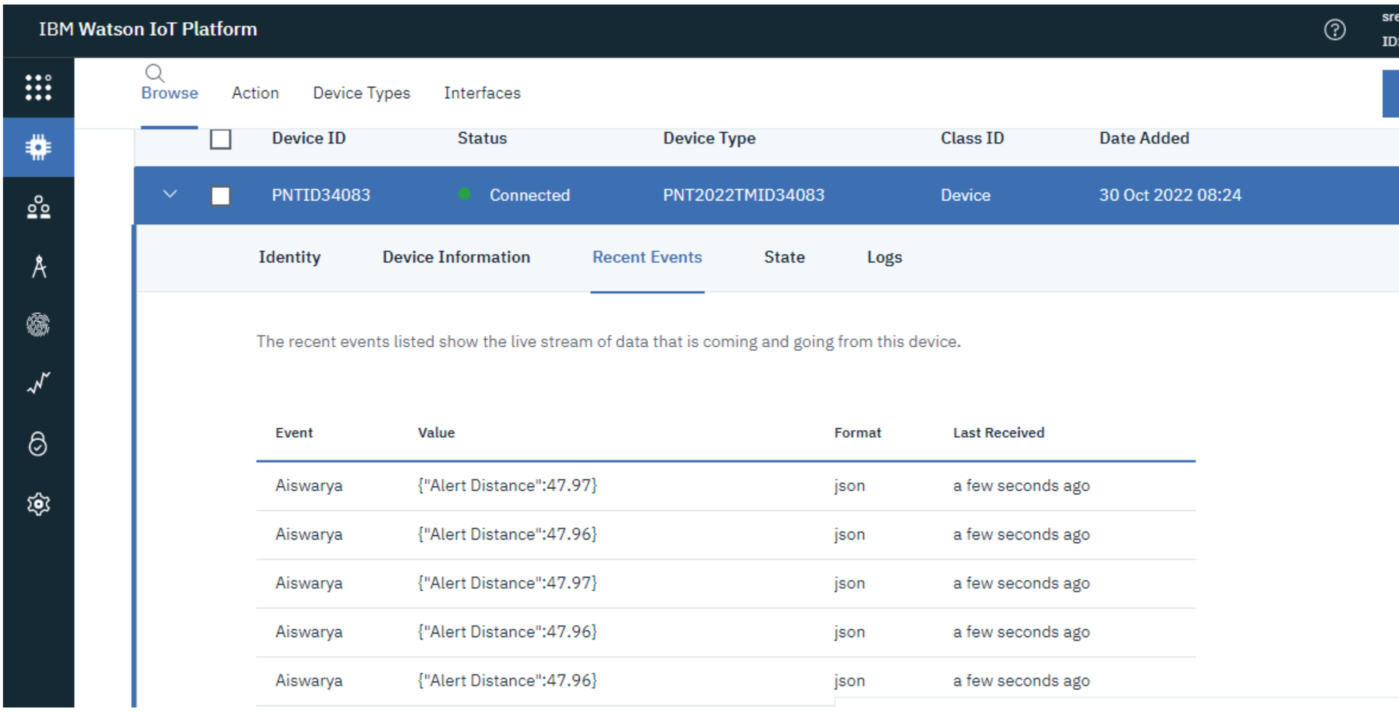
```
Publish OK

Sending payload: {"Alert Distance":47.96}
Publish OK

Sending payload: {"Alert Distance":47.96}
Publish OK
```

When distance>100:



```
Sending payload: {"Distance":167.96}
Publish OK

Sending payload: {"Distance":167.96}
Publish OK

Sending payload: {"Distance":167.96}
```

IBM CLOUD OUTPUT



Device ID	Status	Device Type	Class ID	Date Added
PNTID34083	● Connected	PNT2022TMID34083	Device	30 Oct 2022 08:24

The recent events listed show the live stream of data that is coming and going from this device.

Event	Value	Format	Last Received
Aiswarya	{"Alert Distance":47.97}	json	a few seconds ago
Aiswarya	{"Alert Distance":47.96}	json	a few seconds ago
Aiswarya	{"Alert Distance":47.97}	json	a few seconds ago
Aiswarya	{"Alert Distance":47.96}	json	a few seconds ago
Aiswarya	{"Alert Distance":47.96}	json	a few seconds ago

WOKWI LINK:

https://wokwi.com/projects/347414869145813586