Assignment -4

Assignment Date	**25 October 2022**
Student Name	**Akshayakumar R**
Student Roll Number	**731719106001**
Maximum Marks	**2 Marks**

Question-4:

Write code and connections in wokwi for the ultrasonic sensor. Whenever the distance is less than 100 cms send an "alert" to the IBM cloud and display in the device recent events. Upload document with wokwi share link and images of IBM cloud

PROGRAM

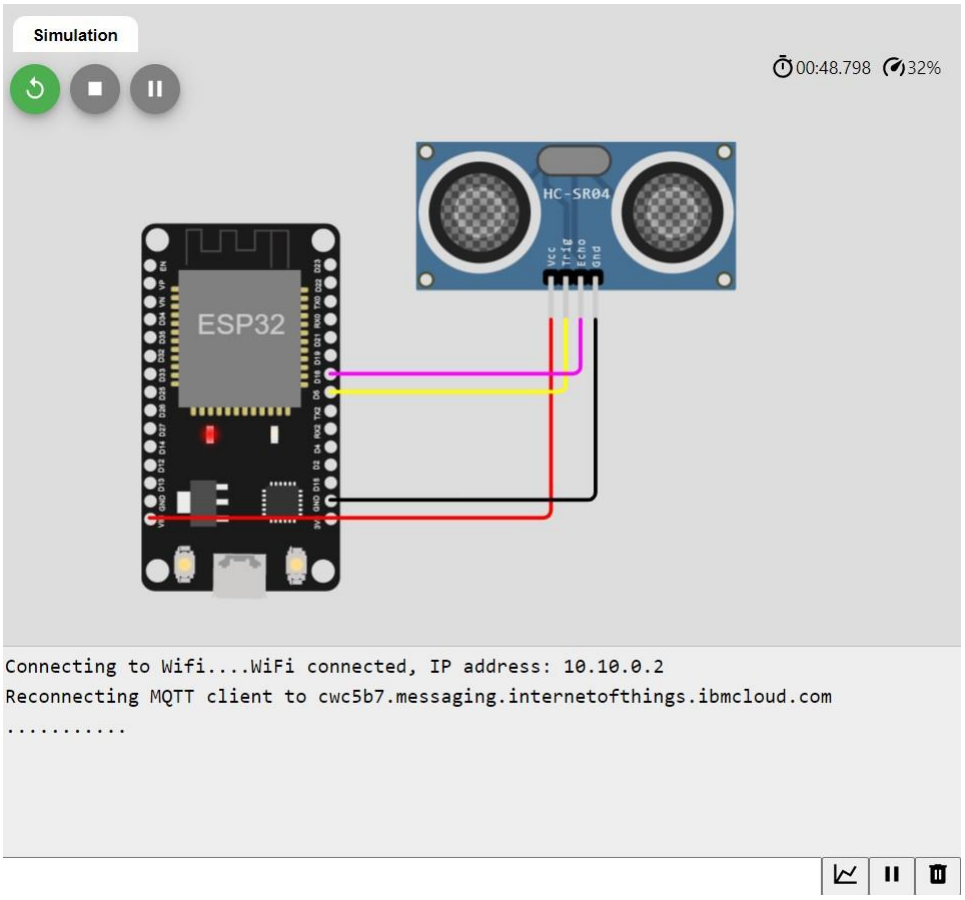
```
#include  <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "cwc5b7"
#define DEVICE_TYPE "ak"
#define DEVICE_ID "7868827081"
#define TOKEN "731719106001"
#define speed 0.034 #define
led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/shreedharen/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");
```

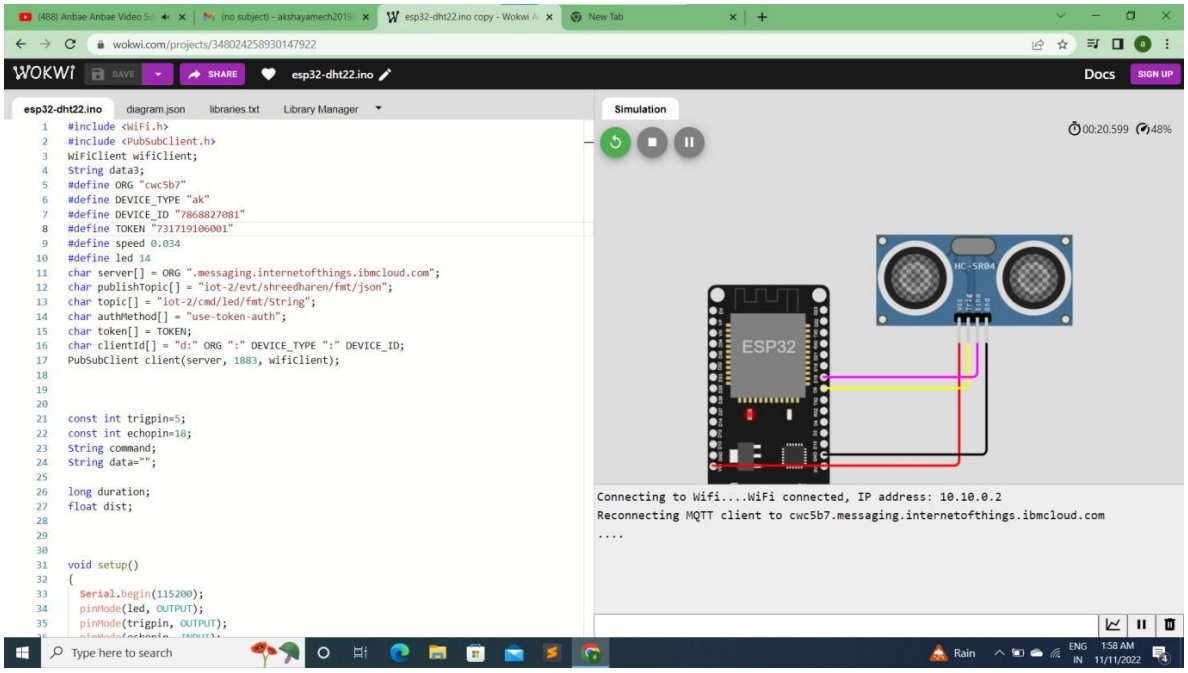
```
  WiFi.begin("Wokwi-GUEST", "", 6);
while (WiFi.status() != WL_CONNECTED) {
delay(500);
   Serial.print(".");
  }
  Serial.print("WiFi connected, IP address: "); Serial.println(WiFi.localIP());
}

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");
    }

  }

  }
```

Connection:


Simulation
00:48.798
32%
HC-SR04
Vcc
Trig
Echo
Gnd
ESP32
Connecting to Wifi....WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to cwc5b7.messaging.internetofthings.ibmcloud.com
.....

Output:


wokwi.com/projects/348024258930147922
WOKWI
SAVE
SHARE
esp32-dht22.ino
Docs
SIGN UP
esp32-dht22.ino
diagram.json
libraries.txt
Library Manager
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "cwc5b7"
#define DEVICE_TYPE "ak"
#define DEVICE_ID "7868827081"
#define TOKEN "731719106001"
#define speed 0.034
#define led 14
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char publishTopic[] = "iot-2/evt/shreedharen/fmt/json";
char topic[] = "iot-2/cmd/led/fmt/String";
char authMethod[] = "use-token-auth";
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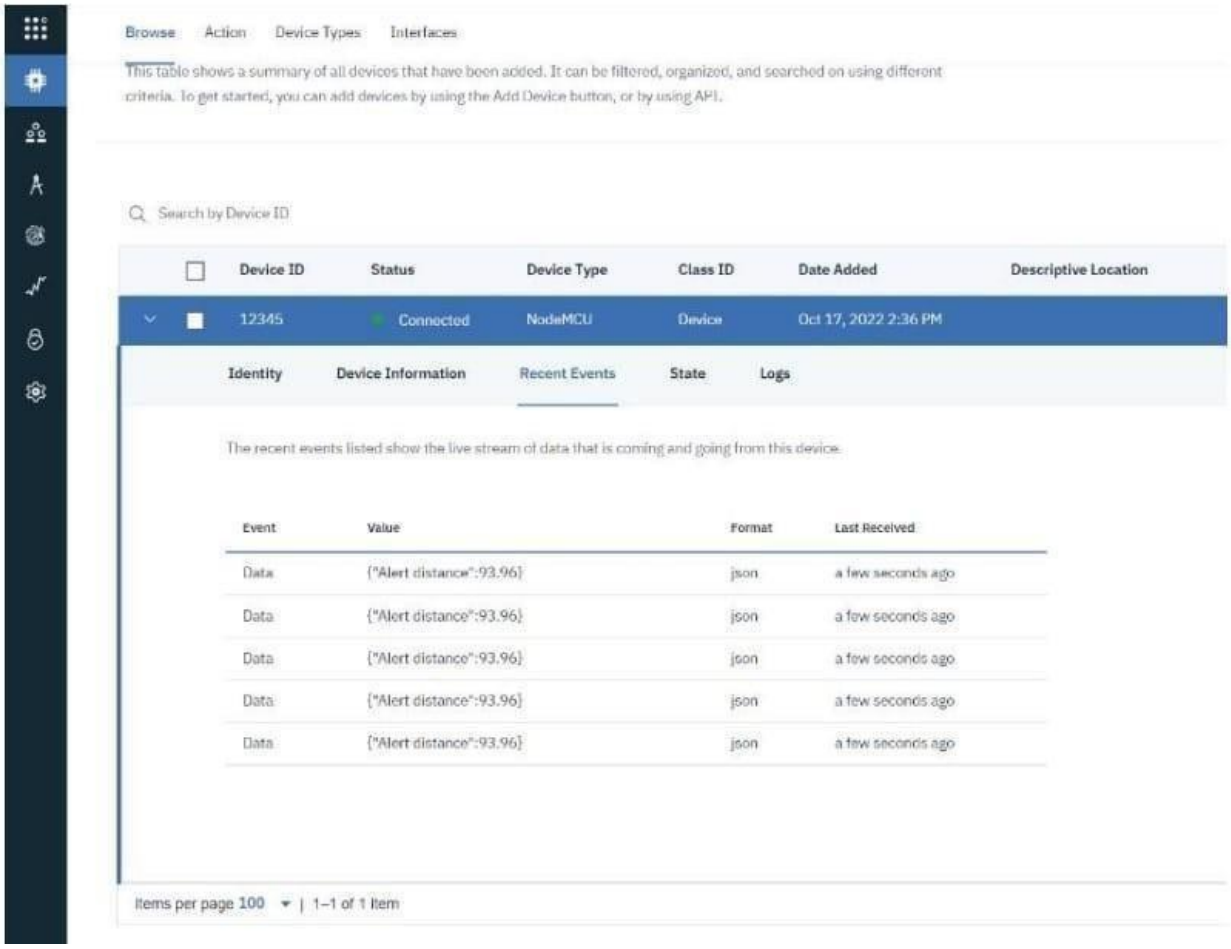
char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
PubSubClient client(server, 1883, wifiClient);
const int trigpin=5;
const int echopin=18;
String command;
String data="";
long duration;
float dist;
void setup()
{
Serial.begin(115200);
pinMode(led, OUTPUT);
pinMode(trigpin, OUTPUT);
Simulation
00:20.599
48%
HC-SR04
ESP32
Connecting to Wifi....WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to cwc5b7.messaging.internetofthings.ibmcloud.com
....
Type here to search
Rain
ENG
IN
1:58 AM
11/11/2022

Output:(IBM Cloud)



Link: https://wokwi.com/projects/348024258930147922