ASSIGNMENT-4

Assignment Date	20 November 2022
Student Name	G.Santhosh
Student Roll Number	73151921044
Maximum Marks	2 Marks

QUESTION-1:

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.

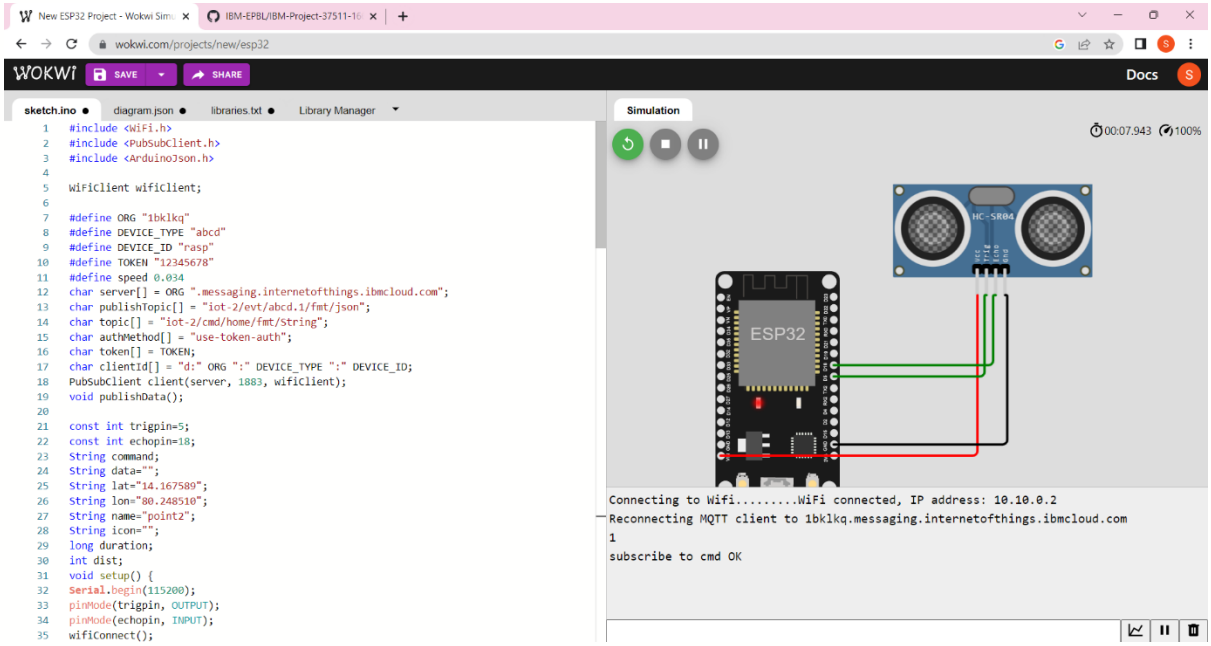
CODE:

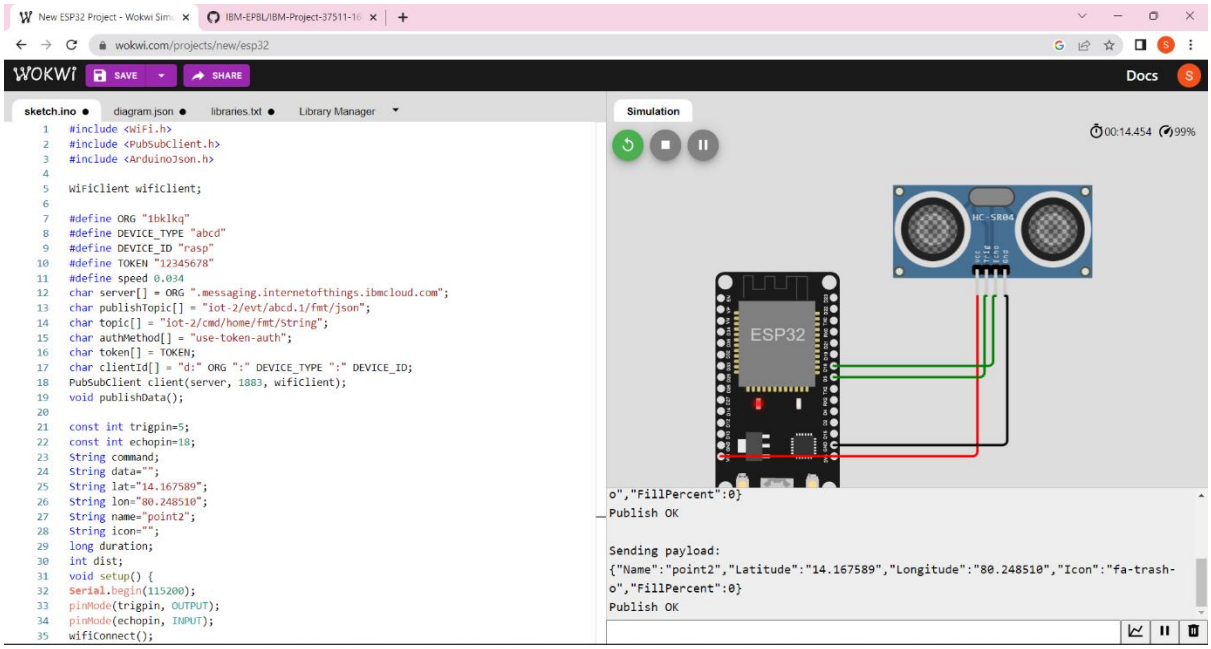
```
#include <WiFi.h>
#include <PubSubClient.h>
#include <ArduinoJson.h>

WiFiClient wifiClient;

#define ORG "1bklkq"
#define DEVICE_TYPE "abcd"
#define DEVICE_ID "rasp"
#define TOKEN "12345678"
#define speed 0.034
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/abcd.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="";
String lat="14.167589";
String lon="80.248510";
String name="point2";
String icon="";
long duration;
int dist;
void setup() {
Serial.begin(115200);
```

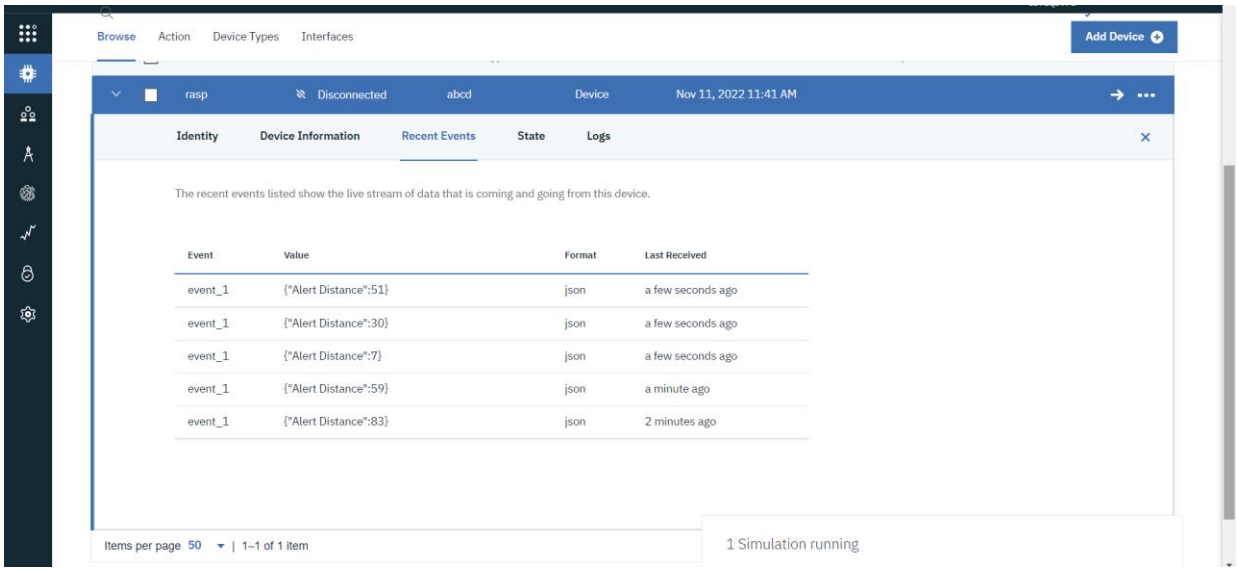
```
pinMode(trigpin, OUTPUT);
pinMode(echopin, INPUT);
wifiConnect();
mqttConnect();
}

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");
   }
}
```

OUTPUT:







https://wokwi.com/projects/348847900923527764