ASSIGNMENT - 4

CODE:

```
#include <WiFi.h>
#include <PubSubClient.h>
WiFiClient wifiClient;
String data3;
#define ORG "i1kqwd"
#define DEVICE_TYPE "abcd"
#define DEVICE_ID "12345"
#define TOKEN "@12345678"
#define speed 0.034
#define led 14
char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
char publishTopic[] = "iot-2/evt/naveen/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;
float dist;



void setup()
{
  Serial.begin(115200);
  pinMode(led, OUTPUT);
  pinMode(trigpin, OUTPUT);
  pinMode(echopin, INPUT);
  wifiConnect();
  mqttConnect();
}

void loop() {
  bool isNearby = dist < 100;
```

```cpp
    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("Warning crosses 110cm -- it automaticaly of the
loop");
        digitalWrite(led,HIGH);
    }

  }
    if(dist>101 && dist<111){
    String payload = "{\"Normal Distance\":";
    payload += dist;
    payload += "}";

    Serial.print("\n");
    Serial.print("Sending payload: ");
    Serial.println(payload);

    }

  }



  void callback(char* subscribeTopic, byte* payload, unsigned int
payloadLength){
  Serial.print("callback invoked for topic:");
  Serial.println(subscribeTopic);
  for(int i=0; i<payloadLength; i++){
    dist += (char)payload[i];
  }
  Serial.println("data:"+ data3);
  if(data3=="lighton"){
    Serial.println(data3);
    digitalWrite(led,HIGH);
  }
  data3="";
}
```
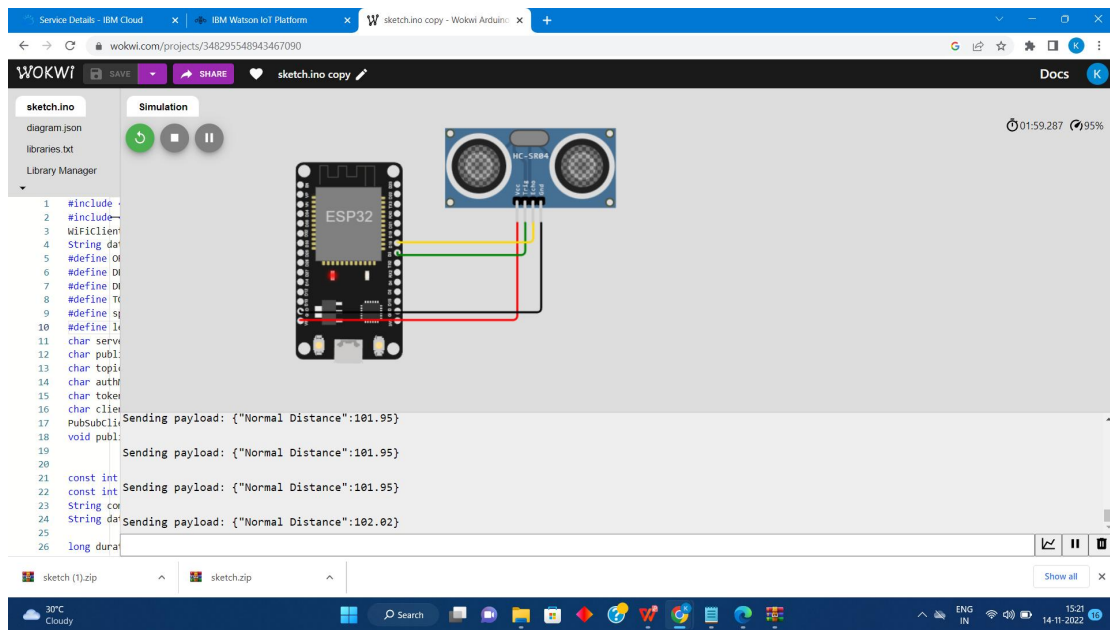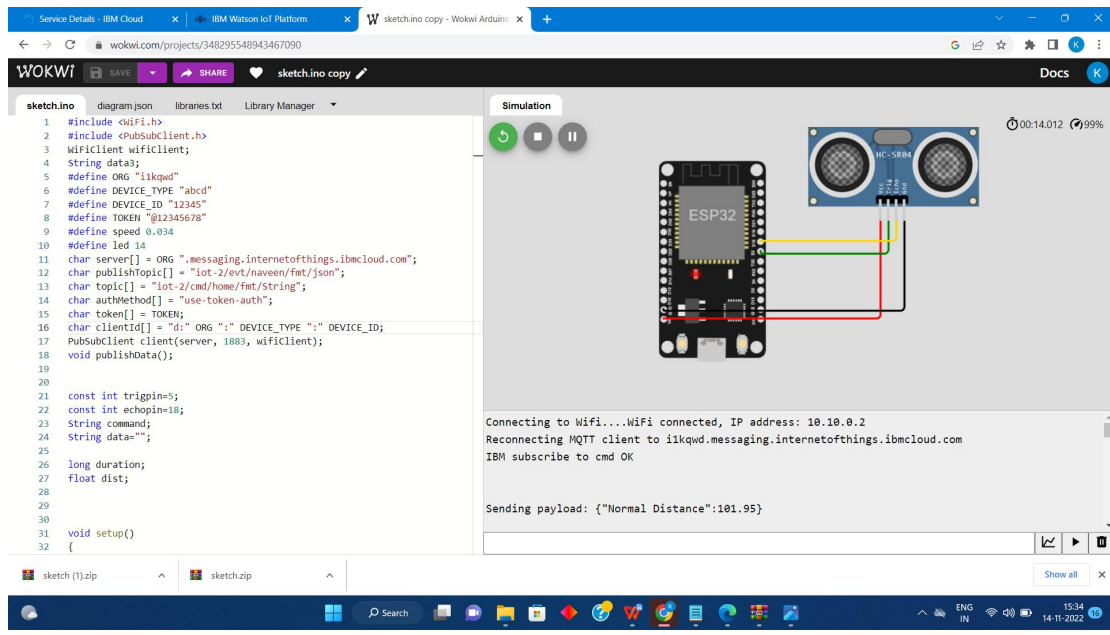
WOKWI OUTPUT :

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sketch.ino   diagram.json   libraries.txt   Library Manager   Simulation

```
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2   #include <PubSubClient.h>
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11  char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
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14  char authMethod[] = "use-token-auth";
15  char token[] = TOKEN;
16  char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
17  PubSubClient client(server, 1883, wifiClient);
18  void publishData();
19
20
21  const int trigpin=5;
22  const int echopin=18;
23  String command;
24  String data="";
25
26  long duration;
27  float dist;
28
29
30
31  void setup()
32  {
```

Connecting to Wifi....WiFi connected, IP address: 10.10.0.2
Reconnecting MQTT client to i1kqwd.messaging.internetofthings.ibmcloud.com
IBM subscribe to cmd OK

Sending payload: {"Normal Distance":101.95}

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sketch.ino
diagram.json
libraries.txt
Library Manager

Simulation

Sending payload: {"Normal Distance":101.95}

Sending payload: {"Normal Distance":101.95}

Sending payload: {"Normal Distance":101.95}

Sending payload: {"Normal Distance":102.02}

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