Assignment-4

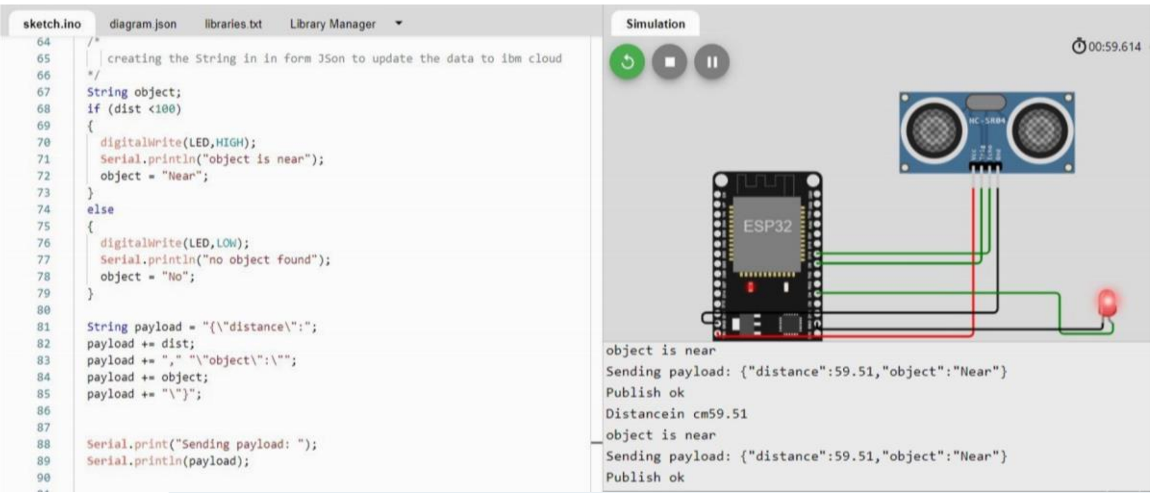
```
#include <WiFi.h>//library for wifi

#include <PubSubClient.h>//library for MQtt


void callback(char* subscribetopic, byte* payload, unsigned int
payloadLength);


//-------credentials of IBM Accounts------


#define ORG "rdegyk"//IBM ORGANITION ID

#define DEVICE_TYPE "weather1 "//Device type mentioned in ibm watson
IOT Platform

#define DEVICE_ID "weather1 "//Device ID mentioned in ibm watson IOT
Platform

#define TOKEN " _oa-3bajxqvCrO(6kW "     //Token

String data3; float dist;


//-------- Customise the above values -------char server[] = ORG

".messaging.internetofthings.ibmcloud.com";// Server Name

char publishTopic[] = "iot-2/evt/Data/fmt/json";// topic name and type of event
perform and format  in which data to be send char subscribetopic[] = "iot-
2/cmd/test/fmt/String";// cmd

REPRESENT command type AND COMMAND IS TEST OF

FORMAT STRING char authMethod[] = "use-token-auth";//
```

```
authentication method  char token[] = TOKEN; char clientId[] = "d:"

ORG ":" DEVICE_TYPE

":" DEVICE_ID;//client id
//-----------------------------------------

WiFiClient wifiClient; // creating the instance for wificlient

PubSubClient client(server, 1883, callback ,wifiClient); //calling the
predefined client id by passing parameter like server id,portand wificredential


int LED =

4; int trig =

5; int echo

= 18; void

setup()

{

Serial.begin(115200);

pinMode(trig,OUTPUT);

pinMode(echo,INPUT);

pinMode(LED, OUTPUT);

delay(10); wificonnect(); mqttconnect();

}  void loop()// Recursive

Function

{   digitalWrite(trig,LOW);

digitalWrite(trig,HIGH);

delayMicroseconds(10);

digitalWrite(trig,LOW);
```

```
}

float        dur        =
pulseIn(echo,HIGH);

float dist = (dur * 0.0343)/2;
  Serial.print ("Distancein cm");
  Serial.println(dist);


PublishData(dist);
delay(1000);   if

(!client.loop()) {
mqttconnect();

  }
/*....................................retrieving to Cloud..............................*/


void PublishData(float dist) {
mqttconnect();//function call for connecting to
ibm

  /*      creating the String in in form JSon to update the data to ibm cloud
  */   String
object;   if

(dist <100)
  {
    digitalWrite(LED,HIGH);
Serial.println("object is near");     object
= "Near";
  }
else
{

    digitalWrite(LED,LOW);
Serial.println("no object found");     object
= "No";
  }
  String payload =
"{\"distance\":";   payload += dist;
payload += "," "\"object\":\"";
payload += object;   payload +=
"\"}";

Serial.print("Sending payload: ");

Serial.println(payload);   if (client.publish(publishTopic,
(char*) payload.c_str())) {
    Serial.println("Publish ok");// if it sucessfully upload data on the cloud then
it will print publish ok in Serial monitor or else it will print publish failed
  } else {
    Serial.println("Publish failed");
  }
```

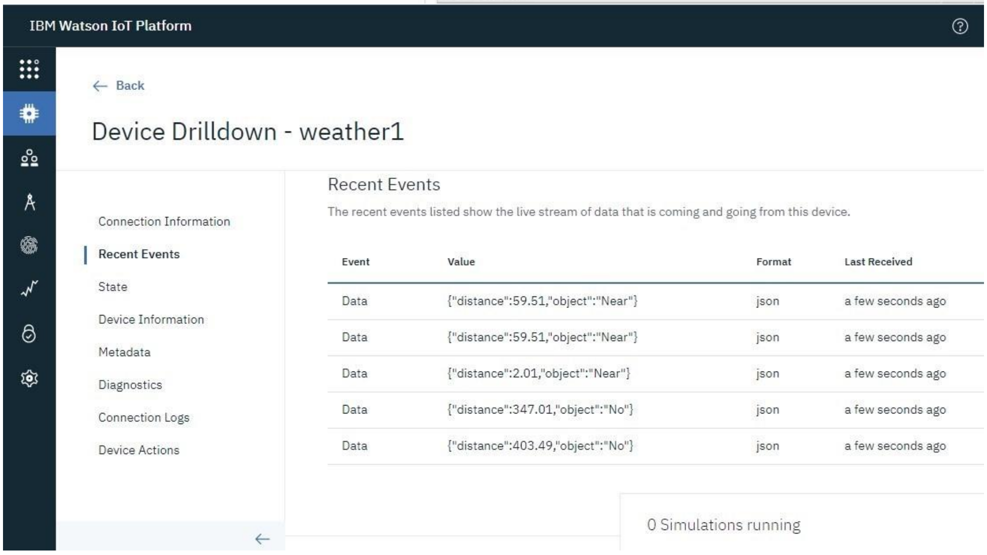
```
}

void mqttconnect() {   if
(!client.connected()) {
    Serial.print("Reconnecting client to ");
Serial.println(server);     while (!!!client.connect(clientId,
authMethod, token)) {       Serial.print(".");       delay(500);

    }
     initManagedDevice();
     Serial.println();
  }  }  void wificonnect() //function
defination for wificonnect

{
  Serial.println();
  Serial.print("Connecting to ");
  WiFi.begin("Wokwi-GUEST", "", 6);//passing the wifi credentials to establish
the connection   while (WiFi.status() != WL_CONNECTED) {     delay(500);


  Serial.print(".")
  ;  }

  Serial.println("");
  Serial.println("WiFi connected");
  Serial.println("IP address: ");
  Serial.println(WiFi.localIP());

}  void

initManagedDevice() {

if

(client.subscribe(subscribetopic)) {

Serial.println((subscribetopic));

    Serial.println("subscribe to cmd OK");

  } else {

    Serial.println("subscribe to cmd FAILED");

  }
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++) {

//Serial.print((char)payload[i]);     data3 +=

(char)payload[i];

  }

data3="";

}
```

```
}
```



```
/*
  creating the String in in form JSon to update the data to ibm cloud
*/
String object;
if (dist <100)
{
  digitalWrite(LED,HIGH);
  Serial.println("object is near");
  object = "Near";
}
else
{
  digitalWrite(LED,LOW);
  Serial.println("no object found");
  object = "No";
}

String payload = "{\"distance\":";
payload += dist;
payload += "," "\"object\":\"";
payload += object;
payload += "\"}";


Serial.print("Sending payload: ");
Serial.println(payload);
```

```
object is near
Sending payload: {"distance":59.51,"object":"Near"}
Publish ok
Distancein cm59.51
object is near
Sending payload: {"distance":59.51,"object":"Near"}
Publish ok
```



Device Drilldown - weather1

Recent Events

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

Event	Value	Format	Last Received
Data	{"distance":59.51,"object":"Near"}	json	a few seconds ago
Data	{"distance":59.51,"object":"Near"}	json	a few seconds ago
Data	{"distance":2.01,"object":"Near"}	json	a few seconds ago
Data	{"distance":347.01,"object":"No"}	json	a few seconds ago
Data	{"distance":403.49,"object":"No"}	json	a few seconds ago