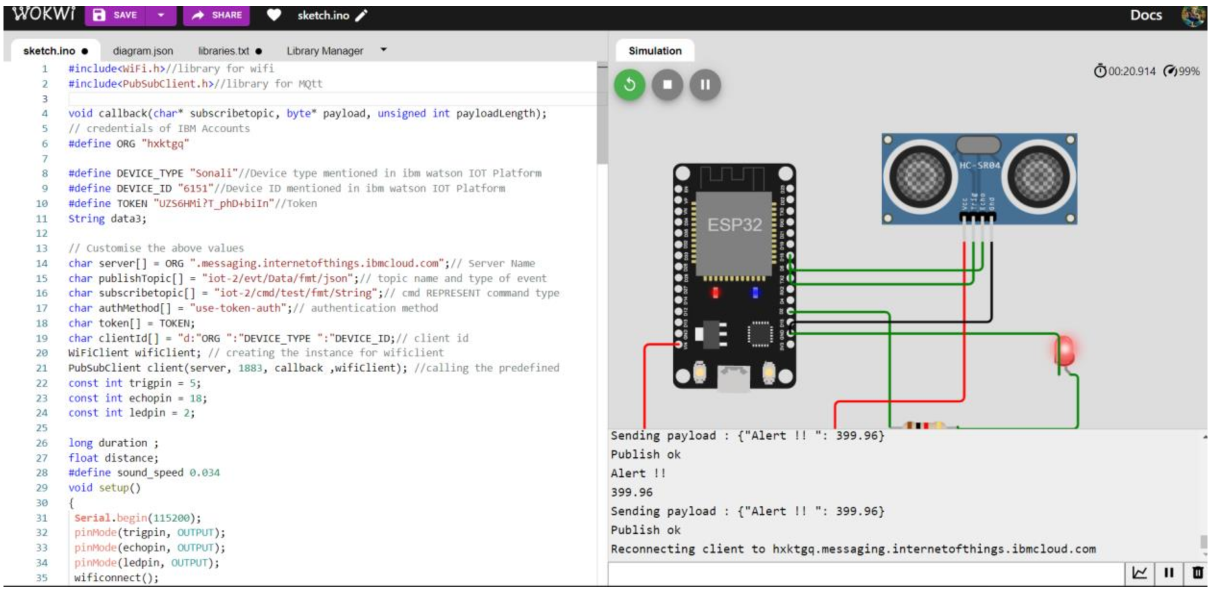
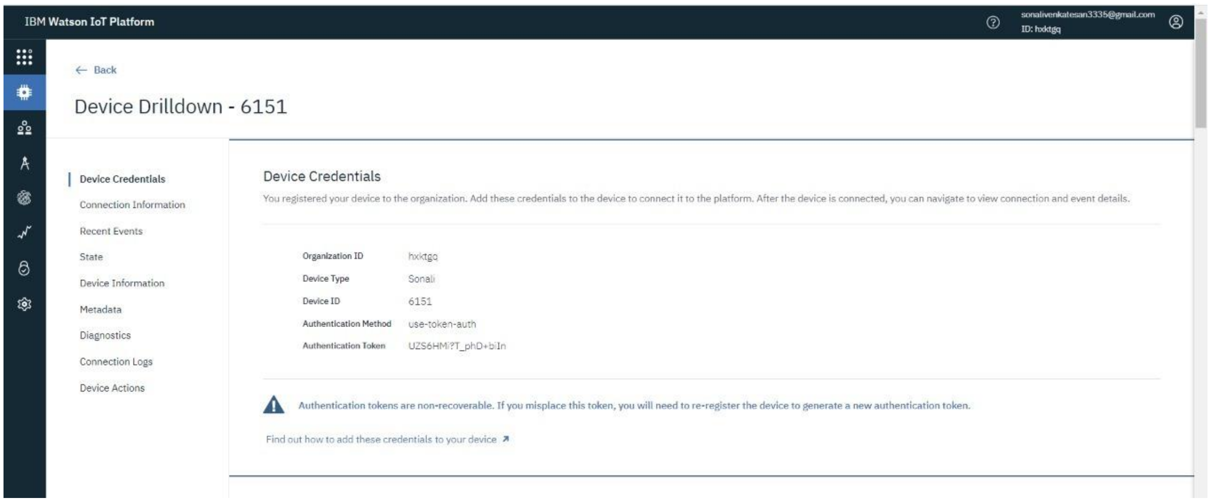
ASSIGNMENT 4



```
#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 "hxktgq"

#define DEVICE_TYPE "Sonali"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "6151"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "UZS6HMi?T_phD+biIn"//Token
String data3;

// 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
char subscribetopic[] = "iot-2/cmd/test/fmt/String";// cmd REPRESENT command type
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
const int trigpin = 5;
const int echopin = 18;
const int ledpin = 2;

long duration ;
float distance;
#define sound_speed 0.034
void setup()
{
 Serial.begin(115200);
 pinMode(trigpin, OUTPUT);
 pinMode(echopin, OUTPUT);
 pinMode(ledpin, OUTPUT);
 wificonnect();
```

```
Sending payload : {"Alert !! ": 399.96}
Publish ok
Alert !!
399.96
Sending payload : {"Alert !! ": 399.96}
Publish ok
Reconnecting client to hxktgq.messaging.internetofthings.ibmcloud.com
```



Device Drilldown - 6151

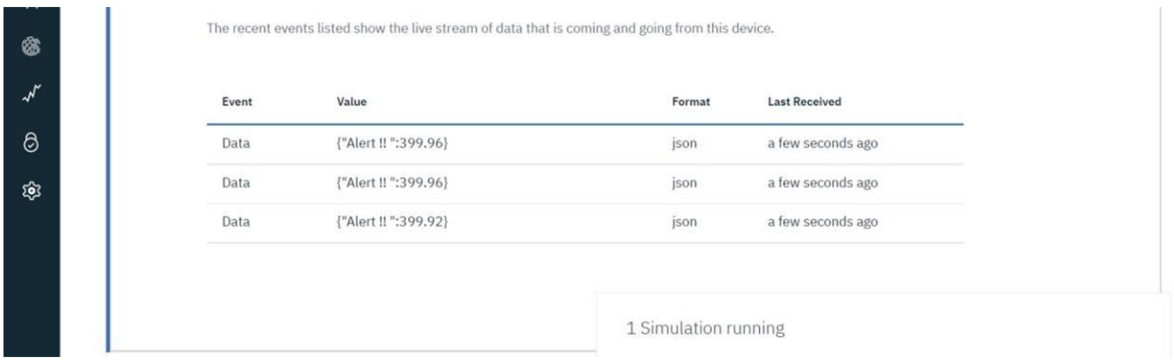
Device Credentials

You registered your device to the organization. Add these credentials to the device to connect it to the platform. After the device is connected, you can navigate to view connection and event details.

Organization ID	hxktgq
Device Type	Sonali
Device ID	6151
Authentication Method	use-token-auth
Authentication Token	UZS6HMi?T_phD+biIn

Authentication tokens are non-recoverable. If you misplace this token, you will need to re-register the device to generate a new authentication token.

Find out how to add these credentials to your device ↗



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

Event	Value	Format	Last Received
Data	{"Alert !! ":399.96}	json	a few seconds ago
Data	{"Alert !! ":399.96}	json	a few seconds ago
Data	{"Alert !! ":399.92}	json	a few seconds ago

1 Simulation running

CODE

https://wokwi.com/projects/347735471352185427

```
#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 "hxktgq"

#define DEVICE_TYPE "Sonali"//Device type mentioned in ibm watson IOT Platform
#define DEVICE_ID "6151"//Device ID mentioned in ibm watson IOT Platform
#define TOKEN "UZS6HMi?T_phD+biIn"//Token
String data3;

// 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
char subscribetopic[] = "iot-2/cmd/test/fmt/String";// cmd REPRESENT command
type
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
const int trigpin = 5;
const int echopin = 18;
const int ledpin = 2;

long duration ;
float distance;
#define sound_speed 0.034
void setup()
{
 Serial.begin(115200);
 pinMode(trigpin, OUTPUT);
 pinMode(echopin, OUTPUT);
 pinMode(ledpin, OUTPUT);
 wificonnect();
 mqttconnect();
}
void loop()
{
 digitalWrite(trigpin, LOW);
 digitalWrite(trigpin, HIGH);
 delayMicroseconds(10);
 digitalWrite(trigpin, LOW);
 duration= pulseIn(echopin,HIGH);
 distance = duration * sound_speed /2;
 if(distance>=100)
 {
 PublishData(distance);
 delay(1000);
 if(!client.loop())
 {
 mqttconnect();
 }
 digitalWrite(ledpin, HIGH);
 Serial.println("Alert !!");
 Serial.println(distance);
 }
 else
 {
 digitalWrite(ledpin, LOW);
 }
 delay(10); // this speeds up the simulation
}
// Retrieving to Cloud
void PublishData(float distance)
{
 mqttconnect();// Function call for connecting to ibm
 // creating the String in in form JSon to update the data to ibm cloud
 String payload = "{\"Alert !! \": ";
 payload += distance;
 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
 }
 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
 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];
 }
 Serial.println("data: "+ data3);
 if(data3=="lighton")
 {
 Serial.println(data3);
 }
 else
 {
 Serial.println(data3);
 }
data3="";
}
```