Assisted Practice: 2.3 Perform All Test Annotations

This section will guide you to:

- Implement @Test and other related Annotations

Development Environment

- Eclipse IDE for Enterprise Java Developers v2019-03 (4.11.0)
- JRE: OpenJDK Runtime Environment 11.0.2
- TestNG

This lab has six subsections, namely:

2.1.1 Creating a simple Java project

2.1.2 Installing TestNG

2.1.3 Adding TestNG libraries to the Class Path

2.1.4 Creating a class file named TestAnnotations

2.1.5 Running the project as TestNG

2.1.6 Pushing the code to your GitHub repositories

Step 2.1.1: Creating a simple Java project

- Open Eclipse
- Go the **File** menu. Choose **New->Java Project**
- Enter the project name as **Annotations**. Click on **Next**
- This will create the project files in the Project Explorer

Step 2.1.2: Installing TestNG

- TestNG is installed as an eclipse plugin in your practice lab. (Refer FSD: Lab Guide - Phase 5)

Step 2.1.3: Adding TestNG libraries to the Class Path

- In the Project Explorer, right click on **Annotations**
- Select **Properties**. Select **Java Build Pat**h from the list. Go to **Libraries**
- Click on **Add Library.** Select **TestNG**. Click on **Next**. Click on **Finish**
- Click on **Apply and Close**

Step 2.1.4: Creating a class file named TestAnnotations

- In the Project Explorer, expand **Annotations->Java Resources**
- Right click on **src** and choose **New->Class**
- In **Class Name,** enter **TestAnnotations**. In **Package Name,** enter **com.testannotations** and click on **Finish**
- Enter the following code:

```
package com.testannotations;

import org.testng.annotations.*;

public class TestAnnotations {

    @Test
    public void Test1() {
```

```
            System.out.println("Test1 Executed");
        }
        @Test
        public void Test2() {
            System.out.println("Test2 Executed");
        }

        @BeforeTest
        public void beforeTest() {
            System.out.println("BeforeTest Executed");
        }
        @AfterTest
        public void AfterTest() {
            System.out.println("AfterTest Executed");
        }

        @BeforeMethod
        public void beforeMethod() {
            System.out.println("BeforeMethod Executed");
        }
        @AfterMethod
        public void afterMethod() {
            System.out.println("AfterMethod Executed");
        }

        @BeforeClass
        public void beforeClass() {
            System.out.println("BeforeClass Executed");
        }
        @AfterClass
        public void afterClass() {
            System.out.println("AfterClass Executed");
        }

    }
```

Step 2.1.5: Running the project as TestNG

- Right click on **TestAnnotations** class. Click on **TestNG->Convert to TestNG**
- Click on **Finish.** It will create a **TestNG.xml** file. Open that file
- Right click. Select **Run As ->TestNG Suite**

Step 2.1.6: Pushing the code to your GitHub repositories

- Open your command prompt and navigate to the folder where you have created your files.

  cd <folder path>

- Initialize your repository using the following command:

  git init

- Add all the files to your git repository using the following command:

  git add .

- Commit the changes using the following command:

  git commit . -m "Changes have been committed."

- Push the files to the folder you initially created using the following command:

  git push -u origin master

Assisted Practice: 2.5 Group Test Cases and Parallel Test Execution

This section will guide you to:

- Work with groups attribute of @Test
- Perform cross browser execution (parallel execution)

Development Environment

- Eclipse IDE for Enterprise Java Developers v2019-03 (4.11.0)
- JRE: OpenJDK Runtime Environment 11.0.2
- TestNG
- Selenium WebDriver Jar

This lab has eight subsections, namely:

2.2.1 Creating a simple Java project

2.2.2 Downloading Selenium WebDriver jar, chromdriver.exe, and forefoxdriver.exe

2.2.3 Adding the Web Driver dependency in the project

2.2.4 Installing TestNG

2.2.5 Adding TestNG libraries to the Class Path

2.2.6 Creating a Java class named ParallelTest.java

2.2.7 Running the project

2.2.8 Pushing the code to your GitHub repositories

Step 2.2.1: Creating a simple Java project

- Open Eclipse
- Go the **File** menu. Choose **New->Java Project**

- Enter the project name as **Parallel Tests**. Click on **Next**
- This will create the project files in the Project Explorer

Step 2.2.2: Downloading Selenium WebDriver jar, chromdriver.exe, and forefoxdriver.exe

- Go to https://www.seleniumhq.org/download/ to download the Selenium WebDriver dependency
- Under the section **Selenium Client & WebDriver Language Bindings,** click on **Download** for **Java client version: 3.141.59**
- On the same page, under **Third Party Drivers, Bindings, and Plugins,** click on **Latest** for **Mozilla Gecko Driver**
- Select the file suitable for your operating system
- Go back to the previous page. Click on **Latest** for **Google Chrome Driver**
- From the current releases, select the appropriate file per your Chrome version

Step 2.2.3: Adding the Web Driver dependency in the project

- In the Project Explorer, right click on **Parallel Tests**
- Select **Properties**. Select **Java Build Pat**h from the list. Go to **Libraries**.
- Click on **Add External JARs** and browse the location where you have downloaded the JAR files
- Select JARs from the **root** folder and the **libs** folder
- Click on **Apply and Close**
- Copy the **chromedriver.exe** and **geckodriver.exe**, and paste it your project creating a resource folder

Step 2.2.4: Installing TestNG

- TestNG is installed as an eclipse plugin in your practice lab. (Refer FSD: Lab Guide - Phase 5)

Step 2.2.5: Adding TestNG libraries to the Class Path

- In the Project Explorer, right click on **Parallel Tests**
- Select **Properties**. Select **Java Build Pat**h from the list. Go to **Libraries**
- Click on **Add Library.** Select **TestNG**. Click on **Next**. Click on **Finish**
- Click on **Apply and Close**

Step 2.2.6: Creating a Java class named ParallelTest.java

- In the Project Explorer, expand **Parallel Tests->Java Resources**
- Right click on **src** and choose **New->Class**
- In **Class Name,** enter **ParallelTests** and click on **Finish.** In **Package Name,** enter **com.parallel** and click on **Finish**
- Enter the following code:

```
package com.parallel;



import org.openqa.selenium.By;

import org.openqa.selenium.WebDriver;

import org.openqa.selenium.chrome.ChromeDriver;

import org.openqa.selenium.firefox.FirefoxDriver;
```

```
import org.testng.annotations.Test;


public class ParallelTests {


    WebDriver driver;

    @Test(groups="Chrome")

    public void LaunchChrome() {

        System.setProperty("webdriver.chrome.driver",
"./Resources/chromedriver.exe");

        driver = new ChromeDriver();

        driver.get("https://www.facebook.com");

        try {

            Thread.sleep(2000);

        } catch (Exception e) {

            e.printStackTrace();

        }

    }

    @Test(groups="Chrome", dependsOnMethods="LaunchChrome")

    public void TryFacebook1() {

        System.out.println(Thread.currentThread().getId());

        driver.findElement(By.id("email")).sendKeys("ravi10thstudent@gmail.com");

        driver.findElement(By.id("pass")).sendKeys("12345");
```

```
    driver.findElement(By.id("loginbutton")).click();
}

@Test(groups="Firefox")
public void LaunchFirefox() {
    System.setProperty("webdriver.gecko.driver", "./Resources/geckodriver.exe");
    driver = new FirefoxDriver();
    driver.get("https://www.facebook.com");
    try {
        Thread.sleep(4000);
    } catch (Exception e) {
        e.printStackTrace();
    }

}

@Test(groups="Firefox", dependsOnMethods="LaunchFirefox")
public void TryFacebook2() {
    System.out.println(Thread.currentThread().getId());
    driver.findElement(By.id("email")).sendKeys("ravi10thstudent@gmail.com");
    driver.findElement(By.id("pass")).sendKeys("ravi28394");
```

```
        driver.findElement(By.id("loginbutton")).click();

        System.out.println(Thread.currentThread().getId());

    }

}
```

Step 2.2.7 Running the project

- Right click on **ParallelTests** class. Click on **TestNG->Convert to TestNG**
- Click on **Finish.** It will create a **TestNG.xml** file. Open that file
- Right click. Select **Run As ->TestNG Suite**

Step 2.2.8: Pushing the code to your GitHub repositories

- Open your command prompt and navigate to the folder where you have created your files.

  cd <folder path>

- Initialize your repository using the following command:

  git init

- Add all the files to your git repository using the following command:

  git add .

- Commit the changes using the following command:

  git commit . -m "Changes have been committed."

- Push the files to the folder you initially created using the following command:

  git push -u origin master

Assisted Practice: 2.7 Evaluating Test Cases

This section will guide you to:

- Implement Soft and Hard Assertions on your test cases

Development Environment

- Eclipse IDE for Enterprise Java Developers v2019-03 (4.11.0)
- JRE: OpenJDK Runtime Environment 11.0.2
- Selenium WebDriver Jar
- TestNG

This lab has eight subsections, namely:

2.3.1 Creating a simple Java project

2.3.2 Downloading Selenium WebDriver jar, chromdriver.exe, and forefoxdriver.exe

2.3.3 Adding the WebDriver dependency in the project

2.3.4 Installing TestNG

2.3.5 Adding TestNG libraries to the Class Path

2.3.6 Creating a Java class named Assertions.java

2.3.7 Running the project

2.3.8 Pushing the code to your GitHub repositories

Step 2.3.1: Creating a simple Java project

- Open Eclipse
- Go the **File** menu. Choose **New->Java Project**
- Enter the project name as **Test Assertions**. Click on **Next**
- This will create the project files in the Project Explorer

Step 2.3.2: Downloading Selenium WebDriver jar, chromdriver.exe, and forefoxdriver.exe

- Go to https://www.seleniumhq.org/download/ to download the **Selenium WebDriver** dependency
- Under the section **Selenium Client & WebDriver Language Bindings,** click on **Download** for **Java client version: 3.141.59**
- On the same page, under **Third Party Drivers, Bindings, and Plugins,** click on **Latest** for **Mozilla Gecko Driver**
- Select the file suitable for your operating system
- Go back to the previous page. Click on **Latest** for **Google Chrome Driver**
- From the current releases, select the appropriate file per your Chrome version

Step 2.3.3: Adding the WebDriver dependency in the project

- In the Project Explorer, right click on **Test Assertions**
- Select **Properties**. Select **Java Build Pat**h from the list. Go to **Libraries**
- Click on **Add External JARs** and browse the location where you have downloaded the JAR files
- Select JARs from the **root** folder and the **libs** folder
- Click on **Apply and Close**
- Copy the chromedriver.exe and geckodriver.exe, and paste it your project creating a resource folder

Step 2.3.4: Installing TestNG

- TestNG is installed as an eclipse plugin in your practice lab. (Refer FSD: Lab Guide - Phase 5)

Step 2.3.5: Adding TestNG libraries to the Class Path

- In the Project Explorer, right click on **Test Assertions**
- Select **Properties**. Select **Java Build Pat**h from the list. Go to **Libraries**
- Click on **Add Library.** Select **TestNG**. Click on **Next**. Click on **Finish**
- Click on **Apply and Close**

Step 2.3.6: Creating a Java class named ParallelTest.java

- In the Project Explorer, expand **Test Assertions->Java Resources**
- Right click on **src** and choose **New->Class**
- In **Class Name,** enter **Assertions** and click on **Finish.** In **Package Name,** enter **com.assert** and click on **Finish**
- Enter the following code:

```
package com.asserts;


import org.openqa.selenium.By;

import org.openqa.selenium.WebDriver;

import org.openqa.selenium.chrome.ChromeDriver;

import org.testng.Assert;

import org.testng.annotations.Test;

import org.testng.asserts.SoftAssert;
```

```
public class Assertions {

    SoftAssert soft = new SoftAssert();
    WebDriver driver;
    @Test
    public void Launch() {
        System.setProperty("webdriver.chrome.driver",
"./Resources/chromedriver.exe");
        driver = new ChromeDriver();
        try {
            Thread.sleep(3000);
        } catch (Exception e) {
            e.printStackTrace();
        }
    }

    @Test(dependsOnMethods = { "Launch" })
    public void Facebook() {
        driver.get("https://www.facebook.com");
        soft.assertEquals("FB Title", driver.getTitle());
        try {
```

```
            Thread.sleep(2000);
        } catch (Exception e) {
            e.printStackTrace();
        }
    }

    @Test(dependsOnMethods = { "Facebook" })
    public void Login() {
        driver.findElement(By.id("email")).sendKeys("ravi10thstudent@gmail.com");
        driver.findElement(By.id("pass")).sendKeys("12345");
        driver.findElement(By.id("loginbutton")).click();
        soft.assertAll();

        try {
            Thread.sleep(3000);
        } catch (Exception e) {
            e.printStackTrace();
        }

    }
}
```

Step 2.3.7: Running the project

- Right click on **Assertions** class. Click on **TestNG->Convert to TestNG**
- Click on **Finish.** It will create a **TestNG.xml** file. Open that file
- Right click. Select **Run As ->TestNG Suite**

Step 2.3.8: Pushing the code to your GitHub repositories

- Open your command prompt and navigate to the folder where you have created your files.

  cd <folder path>

- Initialize your repository using the following command:

  git init

- Add all the files to your git repository using the following command:

  git add .

- Commit the changes using the following command:

  git commit . -m "Changes have been committed."

- Push the files to the folder you initially created using the following command:

  git push -u origin master

Assisted Practice: 2.10 Integrating Selenium with Jenkins

This section will guide you to:

- Integrate Selenium with Jenkins
- Configure Maven build

Development Environment

- Eclipse IDE for Enterprise Java Developers v2019-03 (4.11.0)
- JRE: OpenJDK Runtime Environment 11.0.2

This lab has ten subsections, namely:

2.4.1 Creating a Maven project

2.4.2 Editing the pom.xml and adding Selenium and JUnit dependencies

2.4.3 Creating a Java class named NewTest

2.4.4 Adding TestNG libraries to the Class Path

2.4.5 Converting the project into TestNG and changing the run configuration

2.4.6 Running the project as Maven test

2.4.7 Installing Jenkins

2.4.8 Adding Maven plugins to Jenkins

2.4.9 Adding the location of pom.xml in Jenkins CI Job

2.4.10 Pushing the code to your GitHub repositories

Step 2.4.1: Creating a Maven project

- Open Eclipse

- Go the **File** menu. Choose **New->Other->Maven->Maven Project**
- On the **New Maven Project** dialog, select **Create a simple project** and click **Next**
- Enter **SeleJenk** in **Group Id** and **Artifact Id** and click on **Finish**

Step 2.4.2: Editing the pom.xml and adding Selenium and JUnit dependencies

- In the Project Explorer, expand the project **SeleJenk**
- Select **pom.xml** from **Project Explorer**
- Enter the following code:

```
<project xmlns="http://maven.apache.org/POM/4.0.0"

    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

    xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">

    <modelVersion>4.0.0</modelVersion>

    <groupId>SeleJenk</groupId>

    <artifactId>SeleJenk</artifactId>

    <version>0.0.1-SNAPSHOT</version>


    <dependencies>

        <dependency>

            <groupId>junit</groupId>

            <artifactId>junit</artifactId>

            <version>3.8.1</version>

            <scope>test</scope>

        </dependency>

        <dependency>

            <groupId>org.seleniumhq.selenium</groupId>

            <artifactId>selenium-java</artifactId>

            <version>2.45.0</version>
```

```
        </dependency>
        <dependency>
            <groupId>org.testng</groupId>
            <artifactId>testng</artifactId>
            <version>6.14.2</version>
            <scope>test</scope>
        </dependency>



    </dependencies>
    <build>
        <plugins>
            <plugin>
                <groupId>org.apache.maven.plugins</groupId>
                <artifactId>maven-plugin-plugin</artifactId>
                <version>3.6.0</version>
                <configuration>
                    <goalPrefix>plugin</goalPrefix>
                    <outputDirectory>target/dir</outputDirectory>
                </configuration>
            </plugin>
        </plugins>
    </build>
</project>
```

Step 2.4.3: Adding TestNG libraries to the Class Path

- In the Project Explorer, right click on **Test Assertions**
- Select **Properties**. Select **Java Build Pat**h from the list. Go to **Libraries**
- Click on **Add Library.** Select **TestNG** (Refer FSD: Lab Guide - Phase 5). Click on **Next**. Click on **Finish**
- Click on **Apply and Close**

Step 2.4.4: Creating a TestNG class named NewTest

- In the Project Explorer, expand **SeleJenk**
- Right click on **SeleJenk**. Click on **New->Other->TestNG->TestNG Class**
- Enter **Package name** as **com.example** and **NewTest** in the **Name** textbox and click on **Finish**
- Enter the following code:

```
package com.example;

import org.openqa.selenium.WebDriver;
import org.openqa.selenium.chrome.ChromeDriver;
import org.openqa.selenium.firefox.FirefoxDriver;
import org.testng.annotations.AfterTest;
import org.testng.annotations.BeforeTest;
import org.testng.annotations.Test;
import org.testng.asserts.SoftAssert;
public class NewTest {
        private WebDriver driver;
        SoftAssert soft=new SoftAssert();
        @Test
        public void testEasy() {
            System.setProperty("webdriver.chrome.driver",
"./Resources/chromedriver.exe");
            driver=new ChromeDriver();
            driver.get("https://www.facebook.com");
            String title = driver.getTitle();
            soft.assertEquals("FB Login",title);
        }
        @BeforeTest
```

```
        public void beforeTest() {
            driver = new FirefoxDriver();
        }
        @AfterTest
        public void afterTest() {
            driver.quit();
        }
}
```

Step 2.4.5: Converting the project into TestNG and changing the run configuration

- In the Project Explorer, expand **SeleJenk**
- Right click on **SeleJenk** and choose **TestNG->convert to TestNG**

Step 2.4.6: Running the project as Maven test

- Right click on **SeleJenk**
- Click on **Run AS->Maven Test**

Step 2.4.7: Installing Jenkins

- Jenkins is already installed in your Practice lab.(Refer FSD: Lab Guide - Phase 5)
- Use the following commands to navigate to the above-mentioned directory.

  cd /usr/share
  ls

Step 2.4.8: Adding Maven plugins to Jenkins

- In the Jenkins dashboard, click on **Manage Jenkins**
- Click on **Manage Plugins**

- Select the **Available** tab, then find the **Maven Integration** plugin
- Click **Install** without restart

Step 2.4.9: Adding the location of pom.xml in Jenkins CI Job

- Click on **New Item** to create **CI Job**
- Select the **Maven project radio** button and enter **Item Name** as **SeleJenk**
- Click on **Build Environment**
- In **Root POM,** specify the location of pom.xml from your Eclipse workspace
- In **Goals and Options**, type **clean test.** Click on **Save**
- Click on the **SeleJenk** project page and click on the **Build Now** link

Step 2.4.10: Pushing the code to your GitHub repositories

- Open your command prompt and navigate to the folder where you have created your files.

  cd <folder path>

- Initialize your repository using the following command:

  git init

- Add all the files to your git repository using the following command:

  git add .

- Commit the changes using the following command:

git commit . -m “Changes have been committed.”

- Push the files to the folder you initially created using the following command:

  git push -u origin master

Assisted Practice: 2.12 Set Up Selenium Grid

This section will guide you to:

- Set up Selenium Grid, which includes setup of Hub and Nodes

This lab has three subsections, namely:

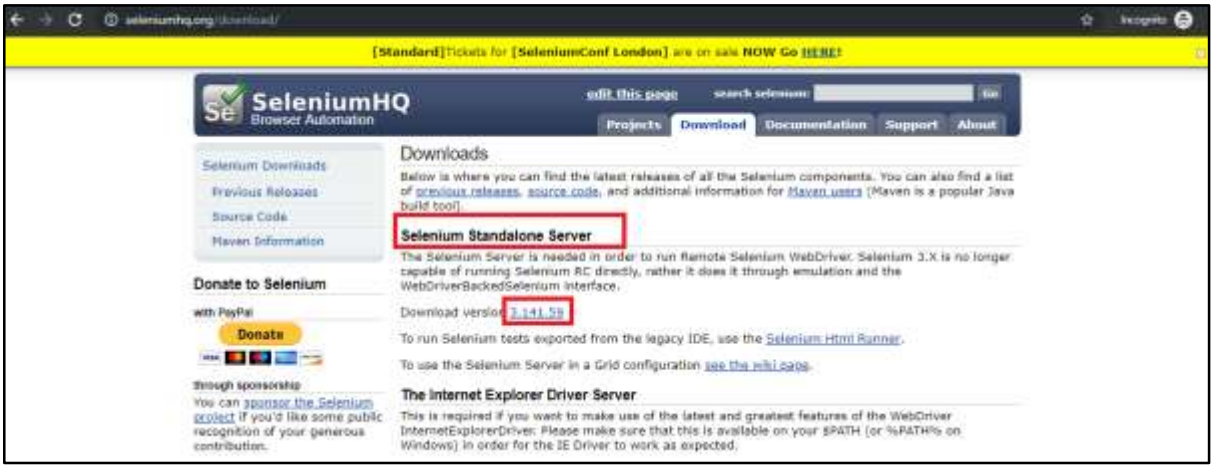
2.5.1 Setting up Selenium Grid hub

2.5.2 Setting up Selenium Grid Nodes

2.5.3 Pushing the code to your GitHub repositories

Step 2.5.1: Setting up Selenium Grid hub

a. Download Selenium standalone Server jar file from https://www.seleniumhq.org/download/ link



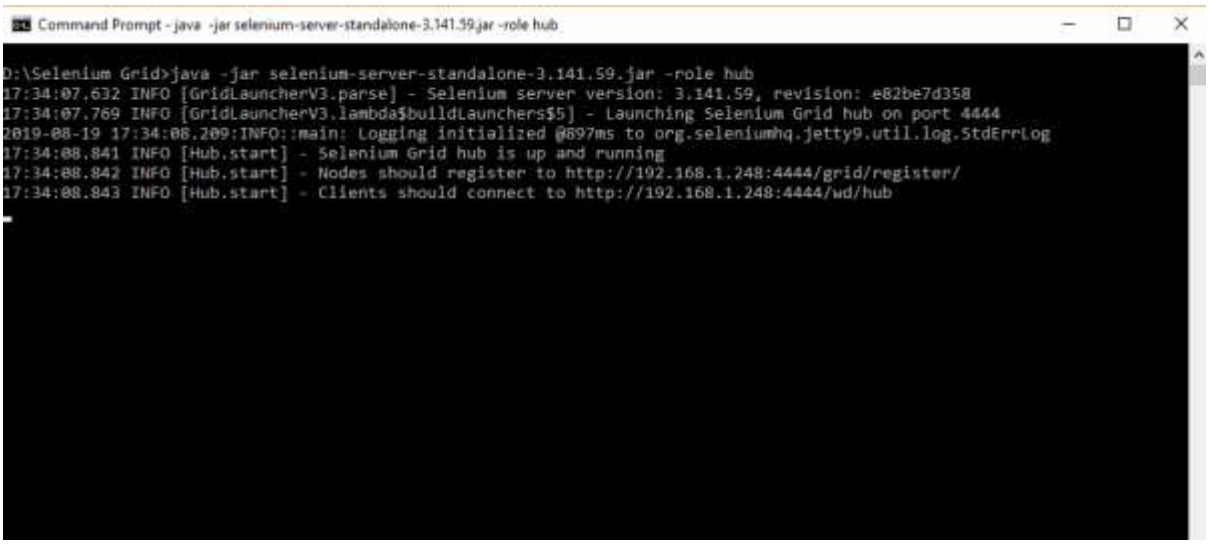
b. Save it in a folder

c. Go to command prompt

d. Navigate to folder structure where you have saved the Selenium standalone Server jar file

e. Type the below command in command prompt

Java -jar selenium-server-standalone-3.141.59.jar -role hub and click on **Enter** button



f. Open the Chrome browser

g. Enter URL as **http://localhost:4444/grid/console** and click on **Enter**

h. Grid console page is loaded as below

Step 2.5.2: Setting up the Selenium Grid Nodes

a. Once the Selenium Grid Hub is set up, the next step is to set up Selenium Grid nodes.

b. Open the new command prompt

c. Navigate to the folder structure where you have saved the Selenium standalone server jar file

d. Type the below command in command prompt

java -jar selenium-server-standalone-3.141.59.jar -role node -hub http://localhost:4444/grid/register and click on E**nter** button, which looks like

e. Open the browser

f. Enter URL as **http://localhost:4444/grid/console** and click on E**nter**

g. Grid console page is loaded below, which shows **Browsers** by default

h. Click on **Configuration,** which shows Configuration details

Step 2.5.3: Pushing the code to your GitHub repositories

- Open your command prompt and navigate to the folder where you have created your files.

  cd <folder path>

- Initialize your repository using the following command:

  git init

- Add all the files to your git repository using the following command:

  git add .

- Commit the changes using the following command:

  git commit . -m "Changes have been committed."

- Push the files to the folder you initially created using the following command:

  git push -u origin master

Assisted Practice: 2.13 Grid Configuration Using JSON

This section will guide you to:

- Configure the grid using JSON

This lab has mainly three subsections, namely:

2.6.1 Configuring the grid hub using JSON

2.6.2 Configuring the grid nodes using JSON

2.6.3 Pushing the code to your GitHub repositories

Step 2.6.1: Configuring the grid hub using JSON

a. Create JSON file for the hub which looks like

```
{
    "port": 4444,
    "newSessionWaitTimeout": -1,
    "servlets" : [],
    "withoutServlets": [],
    "custom": {},
    "capabilityMatcher": "org.openqa.grid.internal.utils.DefaultCapabilityMatcher",
    "throwOnCapabilityNotPresent": true,
    "cleanUpCycle": 5000,
    "role": "hub",
    "debug": false,
    "browserTimeout": 0,
    "timeout": 1800
  }
```

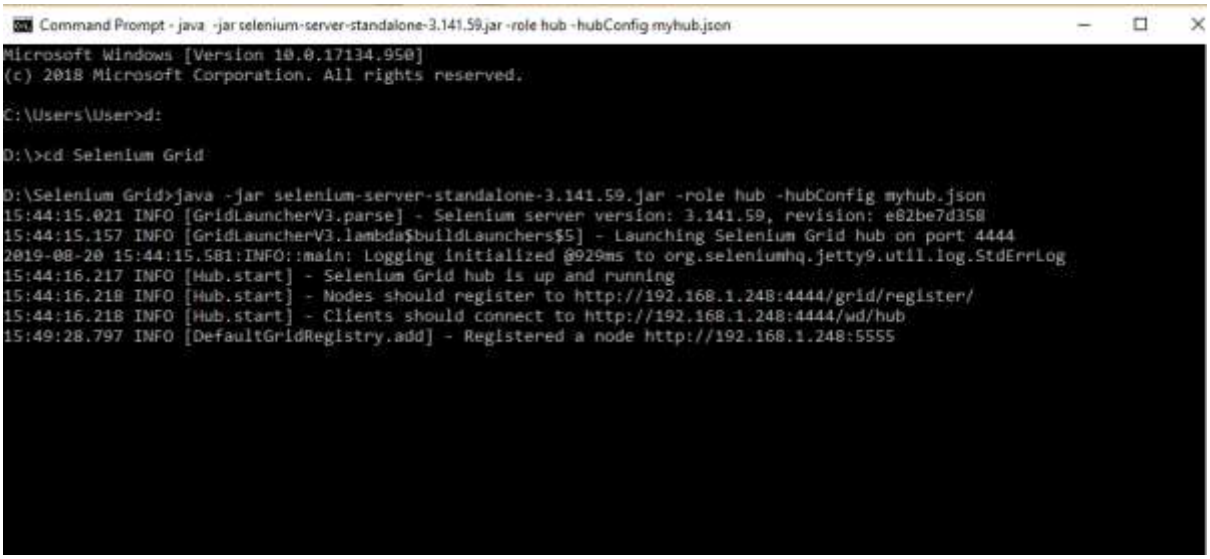
b. Save it in a folder with a valid name (example: myhub) in which we have saved Selenium standalone Server jar file

c. Go to command prompt

d. Navigate to folder structure where you have saved the Selenium standalone Server jar file

e. Type the below command in command prompt

Java -jar selenium-server-standalone-3.141.59.jar -role hub -hubConfig myhub.json and click on **Enter** button, which looks like



f. Open the Chrome browser

g. Enter URL as ‘http://localhost:4444/grid/console’ and click on enter

h. Grid console page is loaded as below

Step 2.6.2: Configuring the grid nodes using JSON

a. Once the Selenium Grid Hub using JSON is configured, the next step is to configure Selenium Grid nodes using JSON.

b. Create JSON file for node, which looks like:

```
{
  "capabilities":
  [
    {
      "browserName": "firefox",
      "maxInstances": 5,
      "seleniumProtocol": "WebDriver"
    },
    {
      "browserName": "chrome",
      "maxInstances": 5,
      "seleniumProtocol": "WebDriver"
    }
  ],
  "proxy": "org.openqa.grid.selenium.proxy.DefaultRemoteProxy",
  "maxSession": 5,
  "port": 5555,
  "register": true,
  "registerCycle": 5000,
  "hub": "http://localhost:4444",
  "nodeStatusCheckTimeout": 5000,
  "nodePolling": 5000,
  "role": "node",
  "unregisterIfStillDownAfter": 60000,
  "downPollingLimit": 2,
  "debug": false,
  "servlets" : [],
  "withoutServlets": [],
  "custom": {}
}
```

c. Save it in a folder with a valid name (example: mynode) in which we have saved Selenium standalone Server jar file

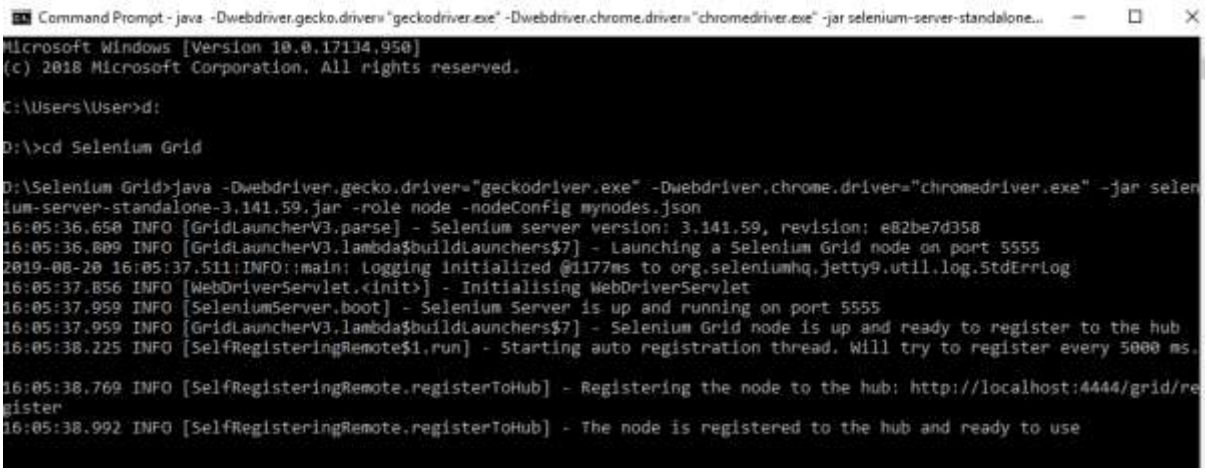
d. Open the new command prompt

e. Navigate to the folder structure where you have saved the Selenium standalone server jar file

f. Type the below command in command prompt

java -Dwebdriver.gecko.driver="geckodriver.exe" -Dwebdriver.chrome.driver="chromedriver.exe" -jar selenium-server-standalone-3.141.59.jar -role node -nodeConfig mynodes.json

and click on E**nter** button, which looks like

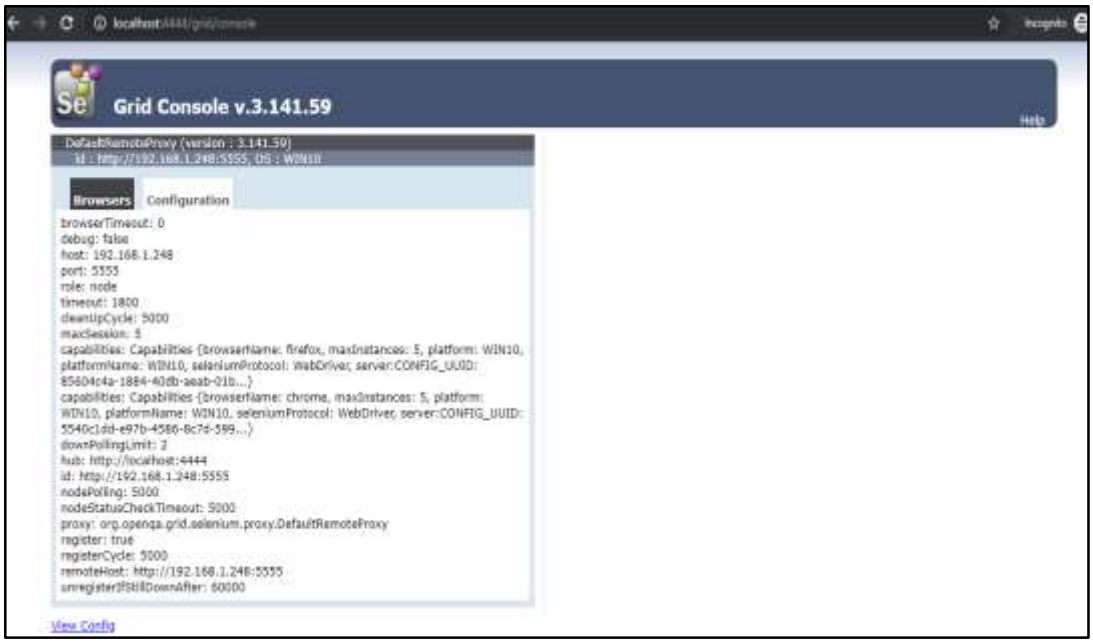


g. Open the browser

h. Enter URL as **http://localhost:4444/grid/console** and click on E**nter**

i. Grid console page is loaded, which shows **Browsers** by default

j. Click on **Configuration** which shows Configuration details



Step 2.6.3: Pushing the code to your GitHub repositories

- Open your command prompt and navigate to the folder where you have created your files.

  cd <folder path>

- Initialize your repository using the following command:

  git init

- Add all the files to your git repository using the following command:

  git add .

- Commit the changes using the following command:

  git commit . -m “Changes have been committed.”

- Push the files to the folder you initially created using the following command:

  git push -u origin master

Assisted Practice: 2.14 Running Tests on Selenium Grid

This section will guide you to:

- Run the scripts on Selenium grid

This lab has two subsections, namely:

2.7.1 Running the tests on Selenium grid

2.7.2 Pushing the code to your GitHub repositories

Step 2.7.1: Running the Tests on Selenium grid

- Open Eclipse
- Click on **Package** and navigate to **New** --> **Class**
- Give a valid Class name (example: GridTest)
- Check the **public static void main** checkbox and click on **finish**, which will create a blank Java class
- Write the desired capabilities in the class, which looks like

```java
package testing.sidTesting;

import org.openqa.selenium.Platform;
import org.openqa.selenium.remote.DesiredCapabilities;

public class GridTest {

  public static void main(String[] args) {
    DesiredCapabilities cap = new DesiredCapabilities();
    cap.setBrowserName("chrome");
    cap.setPlatform(Platform.WIN10);
  }

}
```

- Start the selenium grid hub in command prompt using **java -jar selenium-server-standalone-3.141.59.jar -role hub** command
- Start the selenium grid node in Command prompt using **java -Dwebdriver.chrome.driver="chromedriver.exe -jar selenium-server-standalone-3.141.59.jar -role node -hub http://localhost:4444/grid/register** command
- Go to eclipse and add a statement for remoteWebdriver, which has an implementation of WebDriver, should pass the hub port (http://192.168.1.248:4444/wd/hub), and DesiredCapabilities object as parameters
- Write Selenium code to open the browser and navigate to any web page (example: Google page)

```java
import java.net.URL;

import org.openqa.selenium.Platform;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.remote.DesiredCapabilities;
import org.openqa.selenium.remote.RemoteWebDriver;

public class GridTest {

  public static void main(String[] args) throws MalformedURLException {
    DesiredCapabilities cap = new DesiredCapabilities();
    cap.setBrowserName("chrome");
    cap.setPlatform(Platform.WIN10);


    URL url = new URL("http://192.168.1.248:4444/wd/hub");
    WebDriver driver = new RemoteWebDriver(url, cap);

    driver.get("https://www.google.com");
    System.out.println("Google Title: " + driver.getTitle());

    driver.close();
  }

}
```

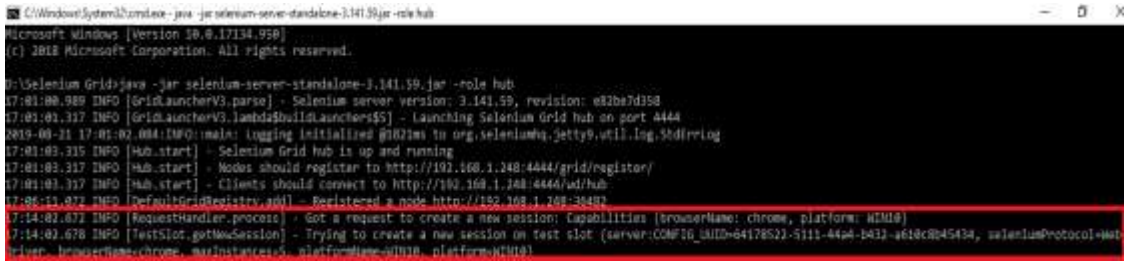
- Execute the Java program by right-clicking on the program and navigating to **Run As**--> **1 Java Application**

- This is how it looks like in Eclipse console

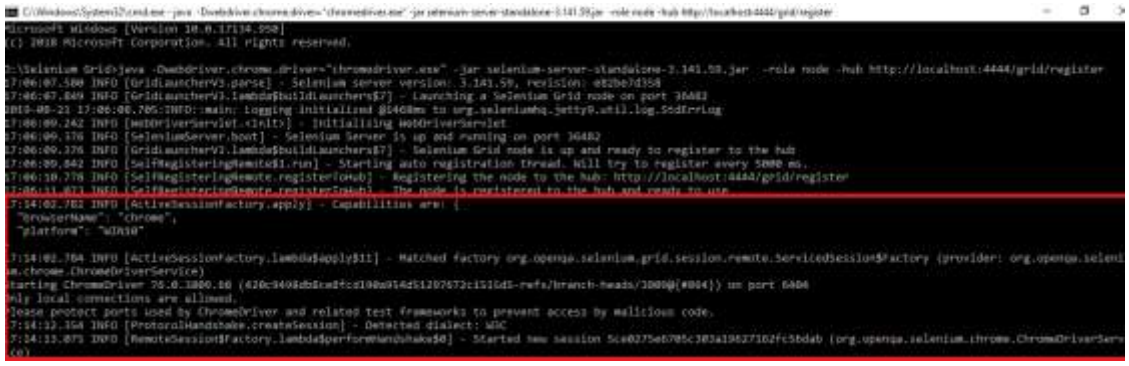
```
Aug 21, 2019 5:14:13 PM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Google Title: Google
```

- We can see the capabilities passed through are displayed in both command prompts in server (hub) as well as in clients (node)

- Selenium grid hub in command prompt with desired capabilities looks like



- Selenium grid node in command prompt with desired capabilities looks like



Step 2.7.2: Pushing the code to your GitHub repositories

- Open your command prompt and navigate to the folder where you have created your files.

  cd <folder path>

- Initialize your repository using the following command:

  git init

- Add all the files to your git repository using the following command:

  git add .

- Commit the changes using the following command:

git commit . -m “Changes have been committed.”

- Push the files to the folder you initially created using the following command:

  git push -u origin master