**Configure parallel execution of tests using TestNG selenium**

In testing, it is always important to test application in different browsers. We can perform automation on multiple browsers using selenium and testng. If there are more number of tests that need to be executed in parallel on different browsers also, we can do this using testng. And there is an other challenging task such executing tests in ***different browser versions*** and also ***different Operating systems***. This can be achieved with [Selenium Grid](https://code.google.com/p/selenium/wiki/Grid2).

We will look into the below examples in detail:

Below is the sample test which will only run one browser at a time and to run all the browsers in parallel, we need to add a parameter in testng.xml file which we will see below

**package** com.pack;

**import** java.util.concurrent.TimeUnit;

**import org.openqa.selenium.By;**

**import org.openqa.selenium.WebDriver;**

**import org.openqa.selenium.WebDriverException;**

**import org.openqa.selenium.chrome.ChromeDriver;**

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

**import org.openqa.selenium.ie.InternetExplorerDriver;**

**import org.testng.Assert;**

**import org.testng.annotations.AfterTest;**

**import org.testng.annotations.BeforeTest;**

**import org.testng.annotations.Parameters;**

**import org.testng.annotations.Test;**

**public** **class** **ParallelTest** {

**private** WebDriver driver;

String baseURL = "[http://www.google.com/";](https://www.google.com/)

[@Parameters({ "browser" })](https://www.google.com/)

@BeforeTest

**public** **void** **openBrowser**(String browser) {

**try** {

**if** (browser.equalsIgnoreCase("Firefox")) {

driver = **new** FirefoxDriver();

} **else** **if** (browser.equalsIgnoreCase("chrome")) {

System.setProperty("webdriver.chrome.driver",

"D:/chromedriver.exe");

driver = **new** ChromeDriver();

} **else** **if** (browser.equalsIgnoreCase("IE")) {

System.setProperty("webdriver.ie.driver",

"D:/IEDriverServer.exe");

driver = **new** InternetExplorerDriver();

}

} **catch** (WebDriverException e) {

System.out.println(e.getMessage());

}

}

@Test

**public** **void** **login\_TestCase**() {

driver.navigate().to(baseURL);

*//do something*

}

@Test

**public** **void** **search\_TestCase**() {

driver.navigate().to(baseURL);

*//do something*

}

@AfterTest

**public** **void** **closeBrowser**() {

driver.quit();

}

}

In the above code, we have OpenBrowser method with BeforeTest annotation along with parameter 'browser'. In the xml we will define three tests tags to run each test with different browser. We will compare the browser value with the parameter value and based on that we will create the driver instance. We have now defined three tests with three browsers (Firefox, Google Chrome and Internet Explorer)

Below is the testng.xml file which will run all the tests which are defined. We are passing parameter value with browser name for each test. Tests will be executed in there browsers one by one.

[="" http://testng.org/testng-1.0.dtd">](http://testng.org/testng-1.0.dtd)

[<**suite**](http://testng.org/testng-1.0.dtd) name="Parallel test suite">

  <**test** name="Firefox Test">

  <**parameter** name="browser" value="Firefox"/>

    <**classes**>

      <**class** name="com.pack.ParallelTest"/>

    </**classes**>

  </**test**>

  <**test** name="Chrome Test">

  <**parameter** name="browser" value="chrome"/>

    <**classes**>

      <**class** name="com.pack.ParallelTest"/>

    </**classes**>

  </**test**>

    <**test** name="Internet Explorer Test">

    <**parameter** name="browser" value="IE"/>

    <**classes**>

      <**class** name="com.pack.ParallelTest"/>

    </**classes**>

  </**test**>

</**suite**>

We can also use TestNG to execute tests Simultaneously by defining the **"parallel" attribute to "tests"** to run all the tests in defined browser with the help of testng.xml configuration file.

<**suite** name="Parallel test suite" parallel="tests">

We just need to update the single line in above testng.xml. By defining **parallel="tests"** in suite tag, tests will get executed simultaneously. In order to execute to execute tests simultaneously it is recommended to have good system configuration, so that the execution time can be saved.

It looks like below:

[="" http://testng.org/testng-1.0.dtd">](http://testng.org/testng-1.0.dtd)

[<**suite**](http://testng.org/testng-1.0.dtd) name="Parallel test suite" parallel="tests">

  <**test** name="Firefox Test">

  <**parameter** name="browser" value="Firefox"/>

    <**classes**>

      <**class** name="com.pack.ParallelTest"/>

    </**classes**>

  </**test**>

  <**test** name="Chrome Test">

  <**parameter** name="browser" value="chrome"/>

    <**classes**>

      <**class** name="com.pack.ParallelTest"/>

    </**classes**>

  </**test**>

    <**test** name="Internet Explorer Test">

    <**parameter** name="browser" value="IE"/>

    <**classes**>

      <**class** name="com.pack.ParallelTest"/>

    </**classes**>

  </**test**>

</**suite**>

After executing you can view the report, which will look like below:

