



Mahavir Education Trust's
SHAH & ANCHOR KUTCHHI ENGINEERING COLLEGE
Chembur, Mumbai - 400 088
UG Program in Artificial Intelligence and Data Science

Experiment No. 7

Aim: To Setup & Run Selenium tests in Jenkins using Maven.

Theory:

Jenkins:

Jenkins is an open-source automation tool written in Java with plugins built for Continuous Integration purposes. Jenkins is used to build and test your software projects continuously making it easier for developers to integrate changes to the project, and making it easier for users to obtain a fresh build. It also allows you to continuously deliver your software by integrating with a large number of testing and deployment technologies.

If you are working on multiple projects, you may run multiple jobs on each project. Some projects need to run on some nodes, and in this process, we need to configure slaves. Jenkins slaves connect to the Jenkins master using the Java Network Launch Protocol.

Selenium:

Selenium is a free (open-source) automated testing framework used to validate web applications across different browsers and platforms. You can use multiple programming languages like Java, C#, Python, etc to create Selenium Test Scripts. Testing done using the Selenium testing tool is usually referred to as Selenium Testing.

Selenium is one of the most widely used open source Web UI (User Interface) automation testing suite. It was originally developed by Jason Huggins in 2004 as an internal tool at Thought Works. Selenium supports automation across different browsers, platforms and programming languages.

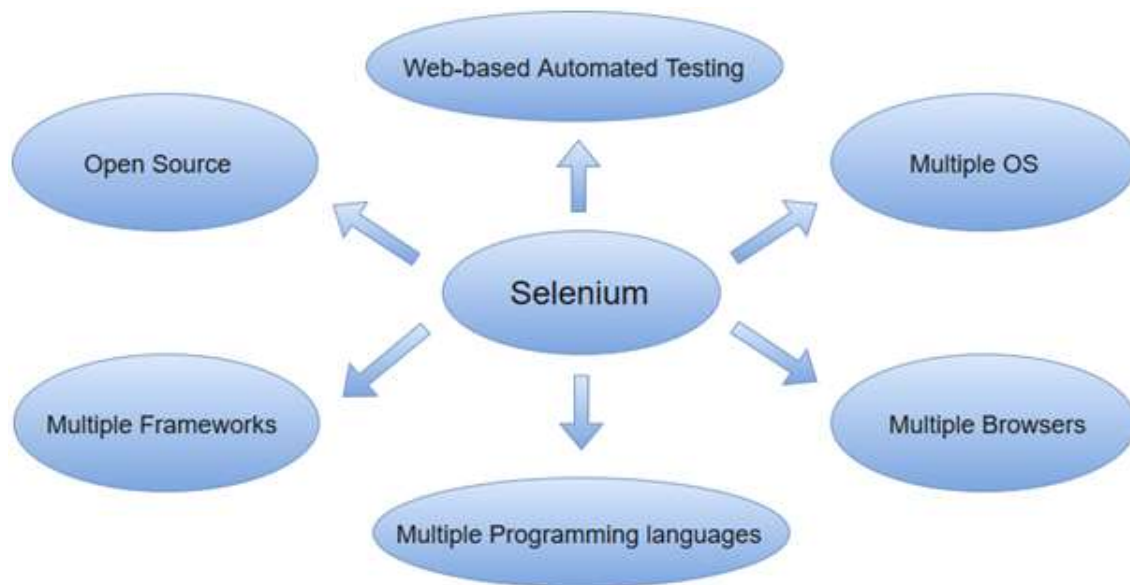
Selenium can be easily deployed on platforms such as Windows, Linux, Solaris and Macintosh. Moreover, it supports OS (Operating System) for mobile applications like iOS, windows mobile and android.

Selenium supports a variety of programming languages through the use of drivers specific to each language. Languages supported by Selenium include C#, Java, Perl, PHP, Python and Ruby. Currently, Selenium Web driver is most popular with Java and C#. Selenium test scripts can be coded in any of the supported programming languages and can be run directly in most



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modern web browsers. Browsers supported by Selenium include Internet Explorer, Mozilla Firefox, Google Chrome and Safari.



Selenium can be used to automate functional tests and can be integrated with automation test tools such as Maven, Jenkins, & Docker to achieve continuous testing. It can also be integrated with tools such as TestNG, & JUnit for managing test cases and generating reports.

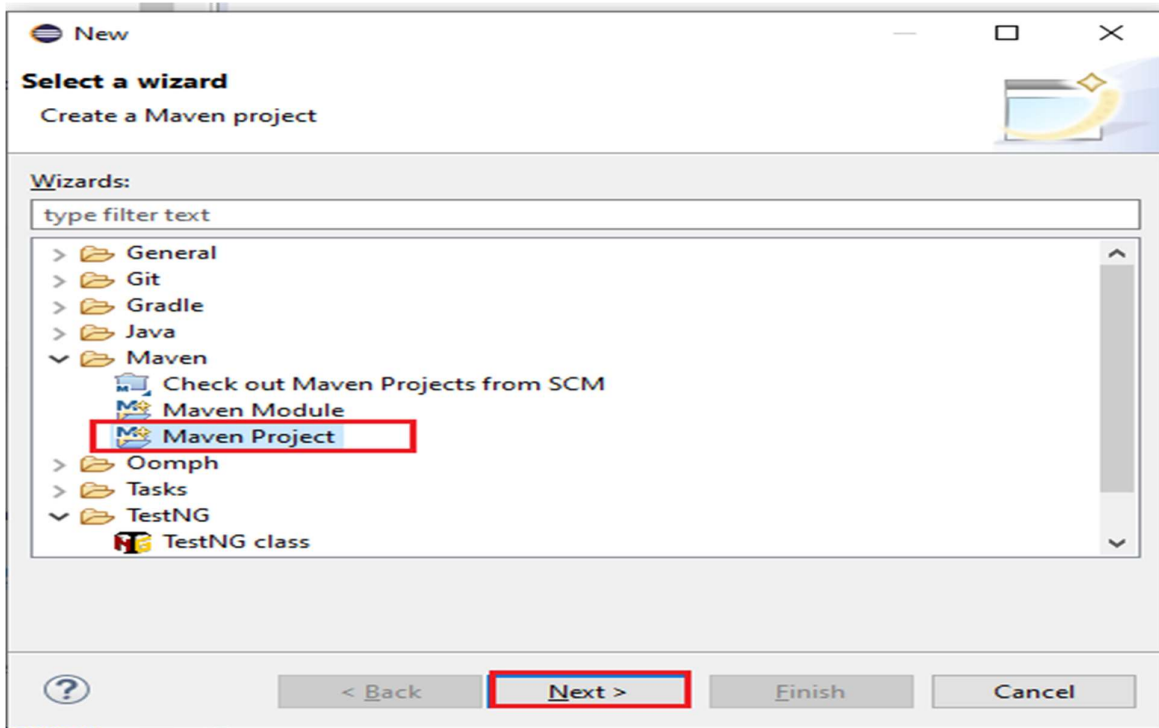
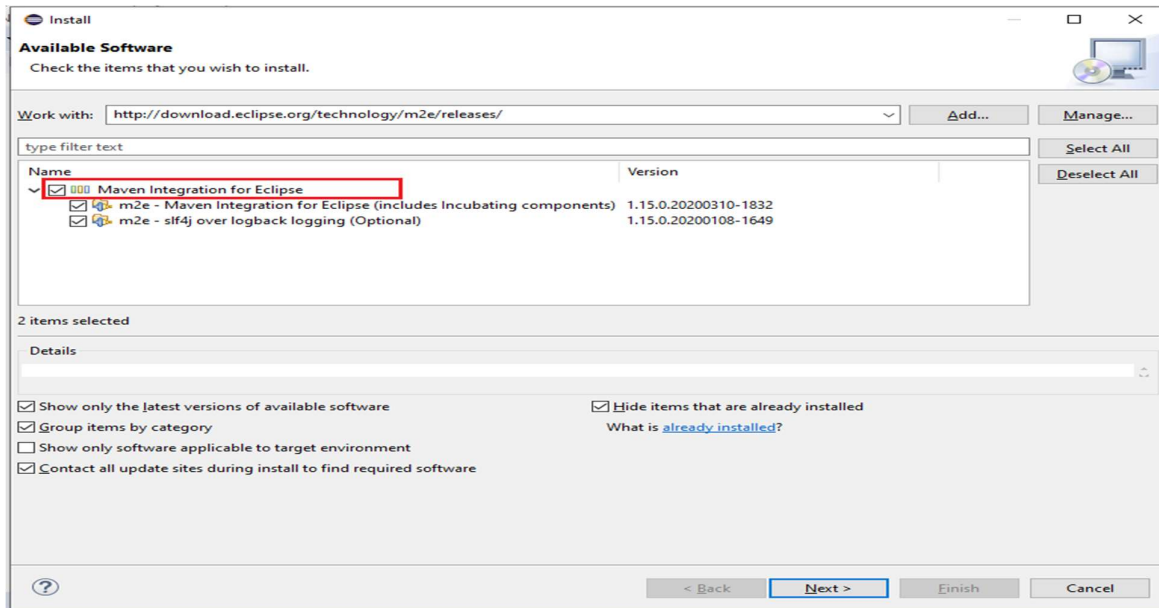
Running Selenium tests in Jenkins allows us to run our tests every time when your software changes and software is deployed to a new environment when the tests pass. Execution history and Test Reports can be saved. A specific time can be scheduled to run your tests. Jenkins supports Maven for deployment and testing a project in continuous integration.

Maven is a management of software and comprehension tool which is based Project Object Model (POM) which can manage project build, reporting and documentation from a central part of information for Maven such as construction directory, dependency, source directory, Goals, plugins, etc



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Output:





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New Maven Project

New Maven project
Select project name and location

☒ Create a simple project (skip archetype selection)

☒ Use default Workspace location
Location: C:\Users\SidduRohan\eclipse-workspace\TestNGProject\src\GridExample.java Browse...

☐ Add project(s) to working set
Working set: More...

► Advanced

< Back **Next >** Finish Cancel

New Maven Project

New Maven project
Configure project

Artifact

Group Id: TestWebdriver

Artifact Id: TestWebdriver

Version: 0.0.1-SNAPSHOT

Packaging: jar

Name:

Description:

Parent Project

Group Id:

Artifact Id:

Version: Browse... Clear

► Advanced

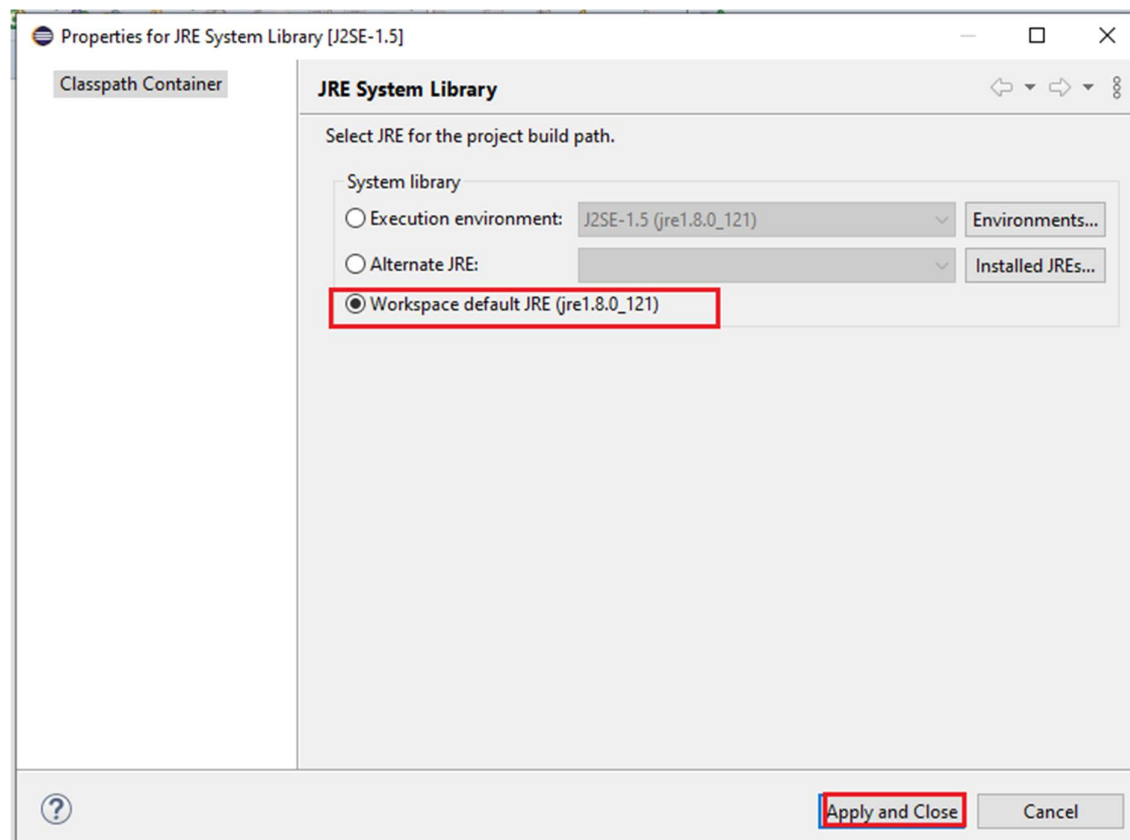
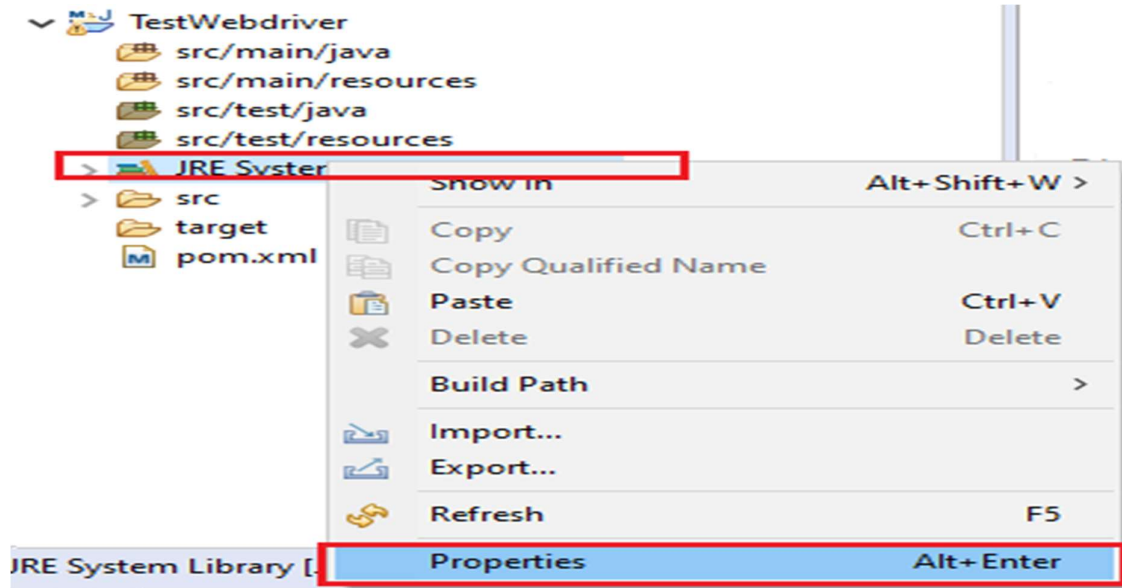
< Back Next > **Finish** Cancel

TestWebdriver

- src/main/java
- src/main/resources
- src/test/java
- src/test/resources
- > JRE System Library [J2SE-1.5]
- > src
- target
- pom.xml

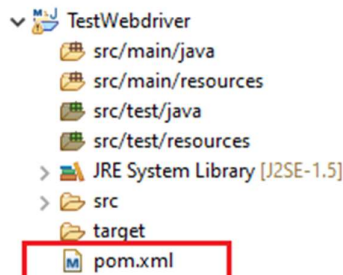


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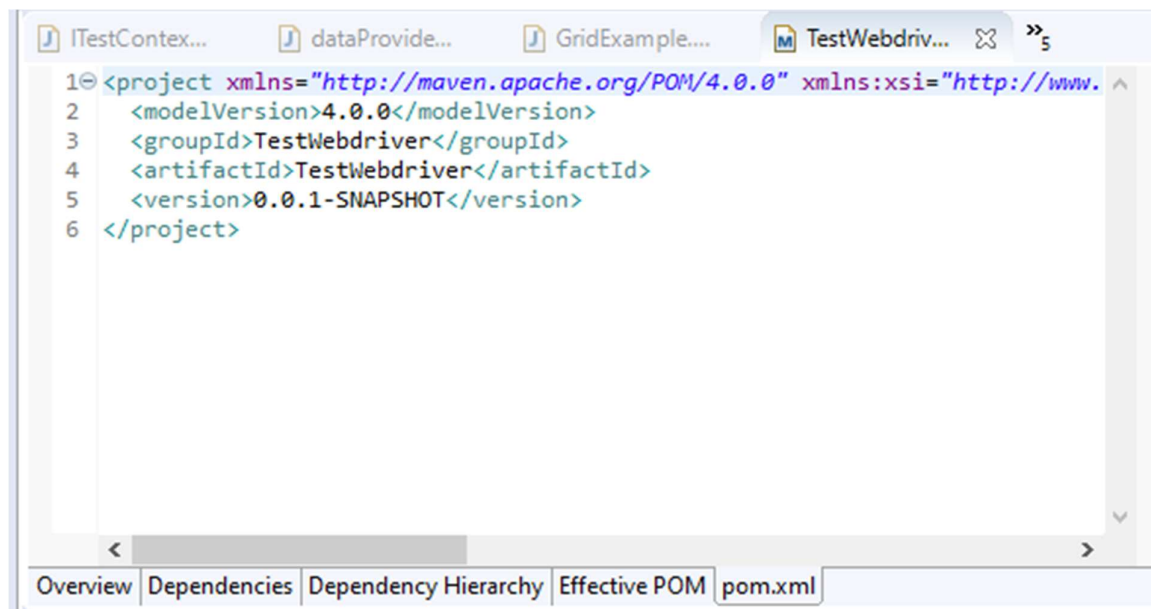
```
<dependencies>
  <dependency>
    <groupId>junit</groupId>
    <artifactId>junit</artifactId>

    <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>6.10.0</version>
    <scope>test</scope>
  </dependency>
</dependencies>
```





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New TestNG class
Specify additional information about the test class.

Source folder:

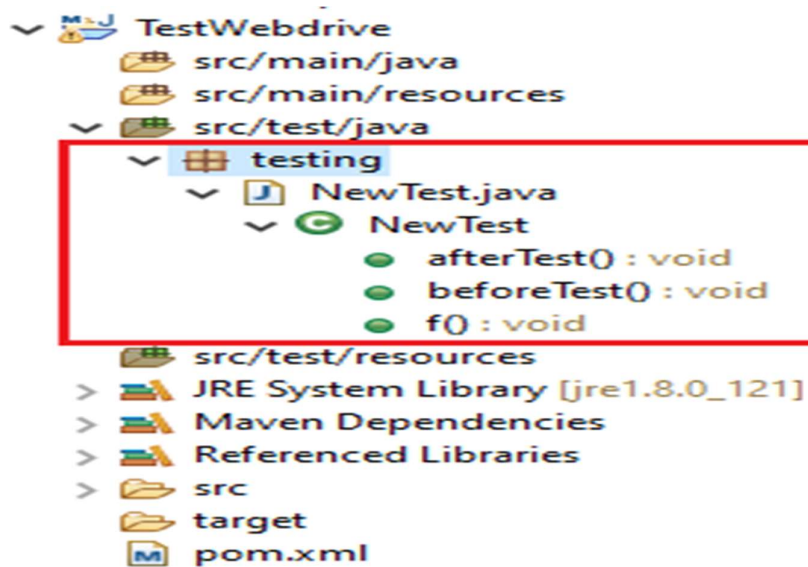
Package name:

Class name:

Annotations

<input type="checkbox"/> @BeforeMethod	<input type="checkbox"/> @AfterMethod	<input type="checkbox"/> @DataProvider
<input type="checkbox"/> @BeforeClass	<input type="checkbox"/> @AfterClass	
<input checked="" type="checkbox"/> @BeforeTest	<input checked="" type="checkbox"/> @AfterTest	
<input type="checkbox"/> @BeforeSuite	<input type="checkbox"/> @AfterSuite	

XML suite file:



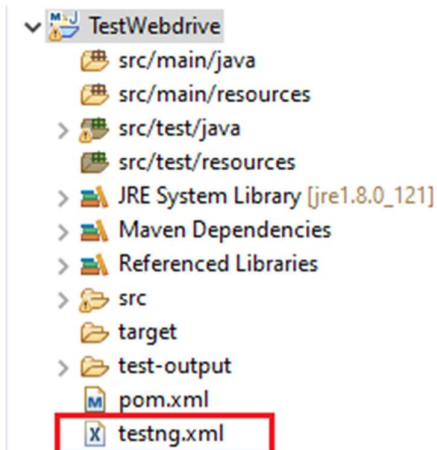


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```
package testing;

import org.testng.annotations.Test;
import org.testng.annotations.BeforeTest;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.firefox.FirefoxDriver;
import org.testng.Assert;
import org.testng.annotations.AfterTest;

public class NewTest {
    private WebDriver driver;
    @Test
    public void testEasy() {
        driver.get("https://www.facebook.com/");
        String title = driver.getTitle();
        //Assert.assertTrue(title.contains("Facebook"));
        Assert.assertTrue(driver.getTitle().contains("Facebook"));
    }
    @BeforeTest
    public void beforeTest() {
        driver = new FirefoxDriver();
    }
    @AfterTest
    public void afterTest() {
        driver.quit();
    }
}
```





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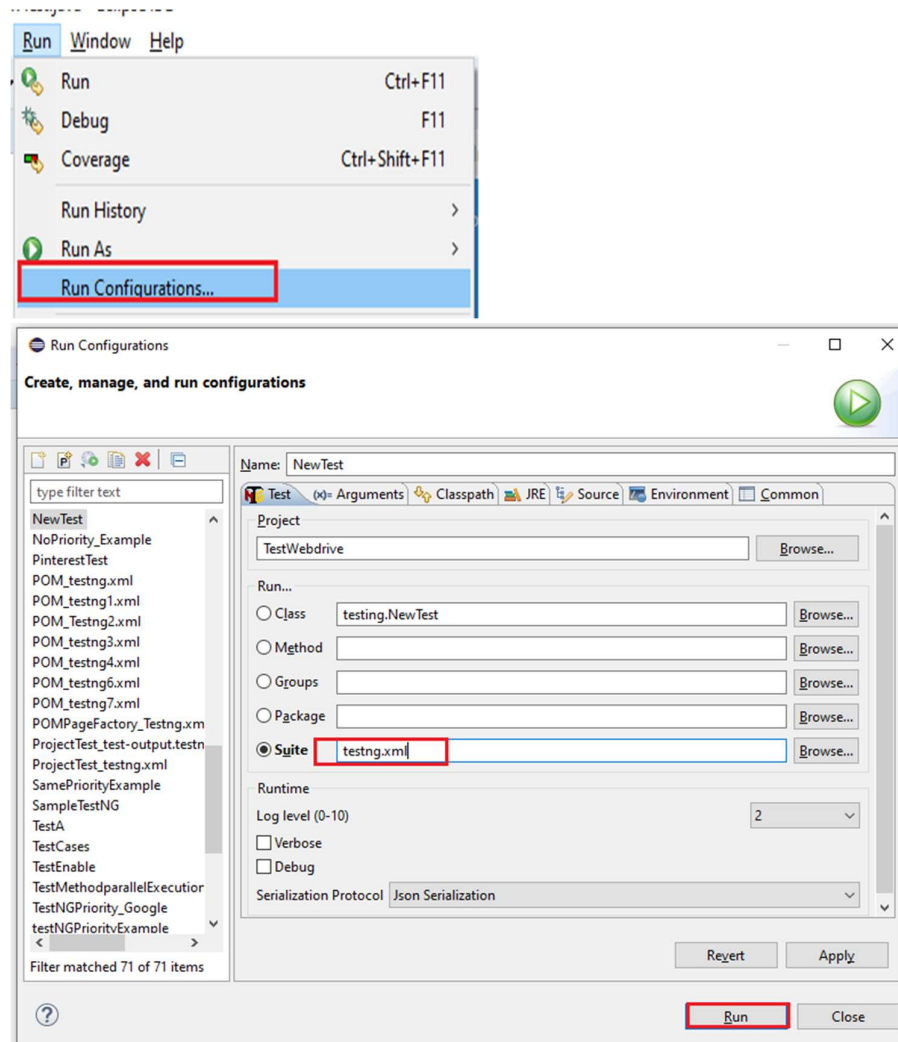
```
<plugins>

<plugin>

<groupId>org.apache.maven.plugins</groupId>

<artifactId>maven-compiler-plugin</artifactId>

<version>2.3.2.</version>
```





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```
<configuration>

<source>1.7</source>

<target>1.7</target>

</configuration>

</plugin>

<plugin>

<groupId>org.apache.maven.plugins</groupId>

<artifactId>maven-surefire-plugin</artifactId>

<version>2.12</version>

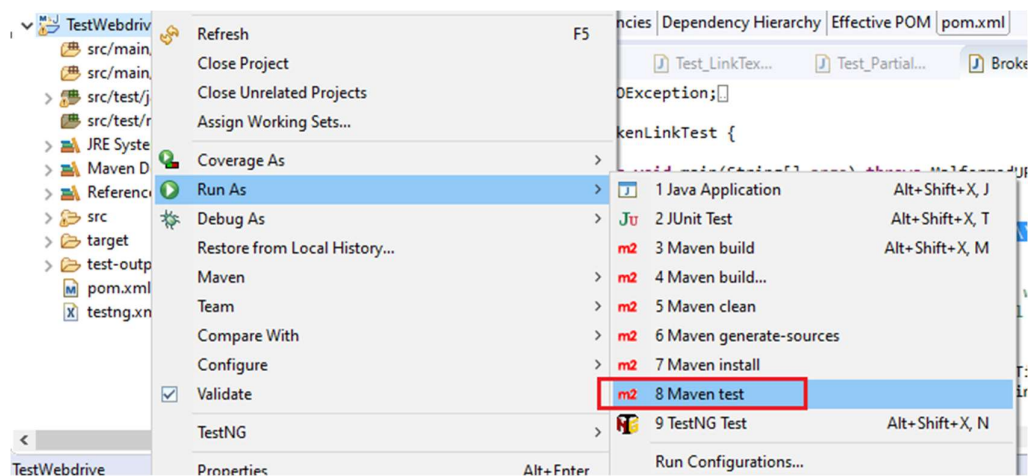
<inherited>true</inherited>

<configuration> <suiteXmlFiles>

    <suiteXmlFile>testng.xml</suiteXmlFile>

</suiteXmlFiles> </configuration>









</plugin> </plugins>
```





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-  New Item
-  People
-  Build History
-  Manage Jenkins
-  My Views
-  Credentials
-  Lockable Resources
-  New View

Welcome to Jenkins!

Please **create new jobs** to get started.

Build Queue
No builds in the queue.

Build Executor Status
1 Idle
2 Idle


-  New Item
-  People
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Enter an item name


» Required field


**Freestyle project**
This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

**Pipeline**
Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.



**Multi-configuration project**
Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

**Folder**
Creates a container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a separate namespace, so you can have multiple things of the same name as long as they are in different folders.



**GitHub Organization**
Scans a GitHub organization (or user account) for all repositories matching some defined markers.

**Organization**
Scans a GitHub organization (or user account) for all repositories matching some defined markers.

[add description](#)

All	+					
S	W	Name ↓	Last Success	Last Failure	Last Duration	
		TestWebdriver	N/A	N/A	N/A	

Jenkins

-  New Item
-  People
-  Build History
-  **Manage Jenkins**
-  My Views
-  Credentials
-  Lockable Resources
-  New View

Build Queue

No builds in the queue.

Manage Jenkins



Configure System

Configure global settings and paths.



Configure Global Security

Secure Jenkins; define who is allowed to access/use the system.



Configure Credentials

Configure the credential providers and types



Global Tool Configuration

Configure tools, their locations and automatic installers.



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JDK

JDK installations

Add JDK

JDK

Name

java 1.8.0

JAVA_HOME

C:\Program Files\Java\jdk1.8.0_121

☐ Install automatically



Delete JDK

Add JDK

List of JDK installations on this system

General Source Code Management Build Triggers Build Environment **Pre Steps** Build Post Steps

Build Settings Post-build Actions

Add pre-build step

Build

Root POM

D:\parent/pom.xml



Goals and options

clean install



Advanced...

Post Steps

☐ Run only if build succeeds ☐ Run only if build succeeds or is unstable ☒ Run regardless of build result

and the post-build steps run only for successful builds, etc.

Save

Apply

Add post-build step



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Build Settings

☐ E-mail Notification

Post-build Actions

Add post-build action ▼

Save

Apply

[Back to Dashboard](#)

[Status](#)

[Changes](#)

[Workspace](#)

[Build Now](#)

[Delete Project](#)

[Configure](#)

[Rename](#)

Builds

All +

S	W	Name ↓	Last Success	Last Failure	Last Duration	
		TestWebdriver	2.2 sec - #12	N/A	0.2 sec	
		TestWebdriver1	N/A	N/A	N/A	
		TestWebDriver2	5 min 38 sec - #1	N/A	0.23 sec	
		TestWebDriver3	N/A	N/A	N/A	

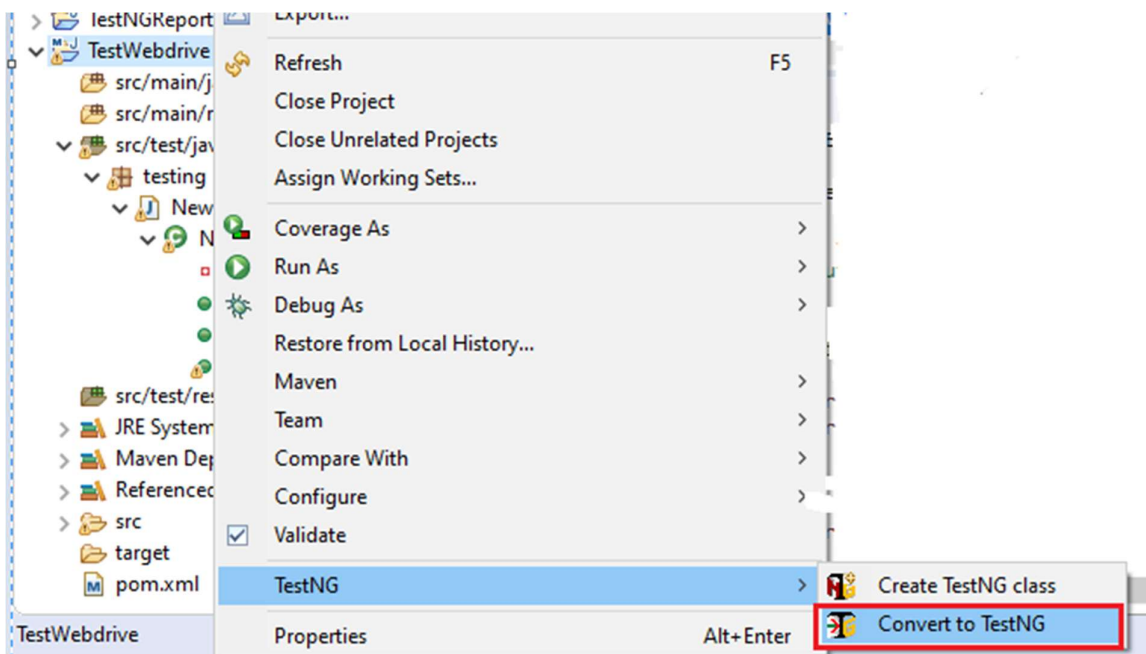
Icon: [S](#) [M](#) [L](#)

Legend Atom feed for all Atom feed for failures Atom feed for just latest builds



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Build History		trend
find		x
#12	08-Jun-2020 19:59	
#11	08-Jun-2020 19:58	
#10	08-Jun-2020 19:58	
#9	08-Jun-2020 19:58	
#8	08-Jun-2020 19:58	
#7	08-Jun-2020 19:58	
#6	08-Jun-2020 19:50	
#5	08-Jun-2020 18:20	
#4	08-Jun-2020 18:20	
#3	08-Jun-2020 18:20	





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Refactoring

Generate testng.xml

☒ Generate testng.xml

Location:

Suite name:

Test name:

Class selection: Parallel mode: Thread count:

Preview

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE suite SYSTEM "http://testng.org/testng-1.0.dtd">
<suite name="Suite">
  <test thread-count="5" name="Test">
    <classes>
      <class name="testing.NewTest"/>
    </classes>
  </test> <!-- Test -->
</suite> <!-- Suite -->
```

Code generation

suite() methods:

Conclusion:

Hence, we have successfully used Maven & performed Selenium tests in Jenkins. The Selenium Maven Jenkins integration is best suited for developing and testing teams distributed across different geographies.