

St. Francis Institute of Technology, Mumbai-400 103  
**Department Of Information Technology**

A.Y. 2024-2025  
Class: TE-ITA/B, Semester: V

Subject: **DevOps Lab**

**Experiment – 8: To setup and run Selenium tests in Jenkins using Maven.**

1. **Aim:** To setup and run Selenium tests in Jenkins using Maven
2. **Objectives:** Aim of this experiment is that, the students will learn:
  - Selenium and how to automate your test cases for testing web elements
  - Introduction to X-Path, TestNG and integrate Selenium with Jenkins and Maven.
3. **Outcomes:** After study of this experiment, the students will learn following:
  - Introduction to Selenium
  - Installing Selenium
  - Creating Test Cases in Selenium WebDriver
  - Run Selenium Tests in Jenkins Using Maven
4. **Prerequisite:** Knowledge of Software Engineering concept of testing and test cases.
5. **Requirements:** Jenkins, JDK, Eclipse IDE, Firefox browser, Personal Computer, Windows operating system, Internet Connection, Microsoft Word.
6. **Pre-Experiment Exercise:**  
**Brief Theory:** Refer shared material
7. **Laboratory Exercise**
  - A. **Procedure:**
    - a. **Answer the following:**
      - Explain Selenium suite?
      - What are the limitations of Selenium IDE?
    - b. **Execute following (Refer the shared material) and attach screenshots:**
      - Create and run a test case on Chrome/Firefox browser with selenium IDE addon
      - Create a Maven Project in Jenkins and run selenium tests using selenium Grid
8. **Post-Experiments Exercise**
  - A. **Extended Theory:**  
Nil
  - B. **Questions:**
    - What are Locators? Explain its types.
    - What is the benefit of using Selenium Grid with Jenkins?
  - C. **Conclusion:**
    - Write what was performed in the experiment.
    - Write the significance of the topic studied in the experiment.
  - D. **References:**
    - <https://jenkins.io/doc/>
    - <https://www.slideshare.net/abediaz/introduction-to-jenkins>
    - <https://q-automations.com/2019/09/26/selenium-grid-with-jenkins/>

## a. Answer the following:

### 1. Explain Selenium suite?

**Answer:** The Selenium Suite is a collection of tools designed for automating web applications for testing purposes. It consists of several components:

1. **Selenium WebDriver:** This is the core component that allows you to interact with web browsers programmatically. It provides a programming interface to create and run test scripts in various programming languages like Java, C#, Python, and more.
2. **Selenium IDE:** A browser extension that enables users to record and playback tests. It's user-friendly and allows for quick test creation without extensive coding knowledge.
3. **Selenium Grid:** A tool that allows for the parallel execution of tests across different browsers and operating systems. This is particularly useful for large test suites that need to be run on multiple environments simultaneously.
4. **Selenium RC (Remote Control):** An older version of Selenium that has been largely replaced by WebDriver. It allowed for the execution of tests in multiple browsers by launching them remotely.

### 2. What are the limitations of Selenium IDE?

**Answer: Limitation of Selenium IDE is:**

**Limited Functionality:** Selenium IDE is primarily for recording and playback. It lacks advanced features such as conditional logic and looping constructs that are present in programming languages.

**Browser Compatibility:** It may not support all the latest browser versions or all features of a browser, limiting its effectiveness for cross-browser testing.

**Script Maintenance:** Test scripts generated by Selenium IDE can be fragile and may require frequent updates, especially when the application under test changes.

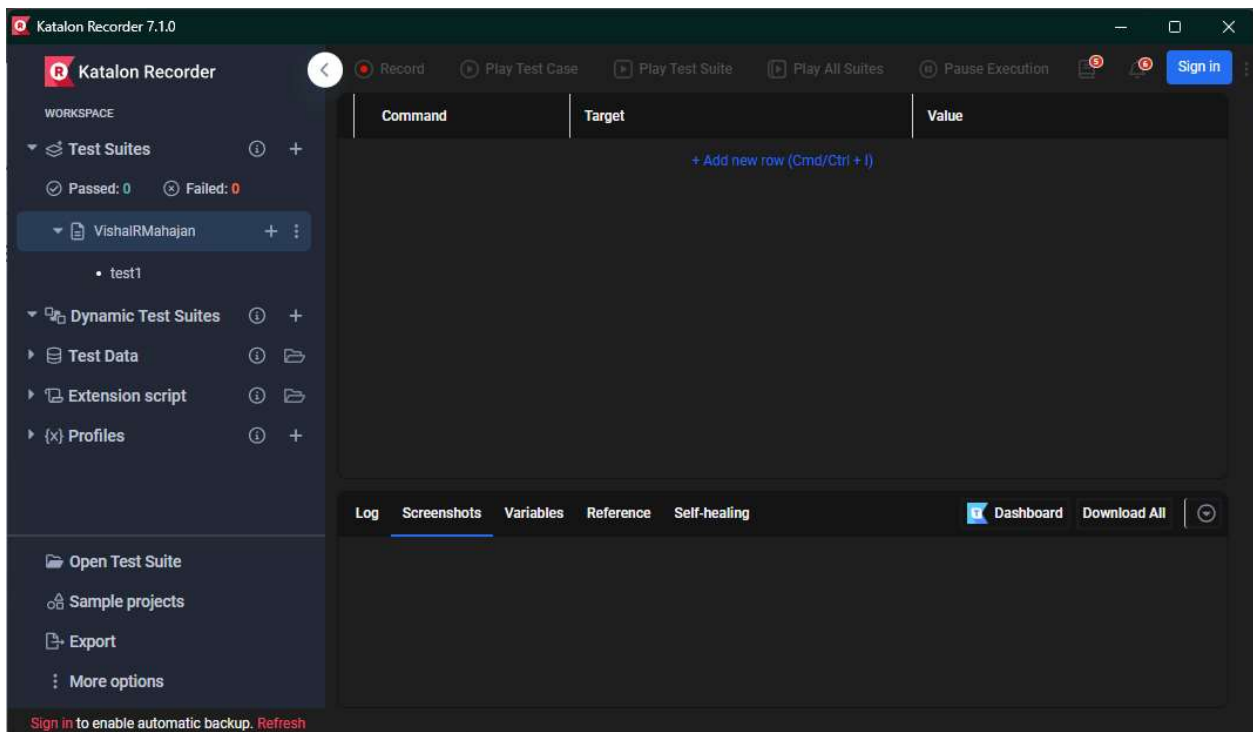
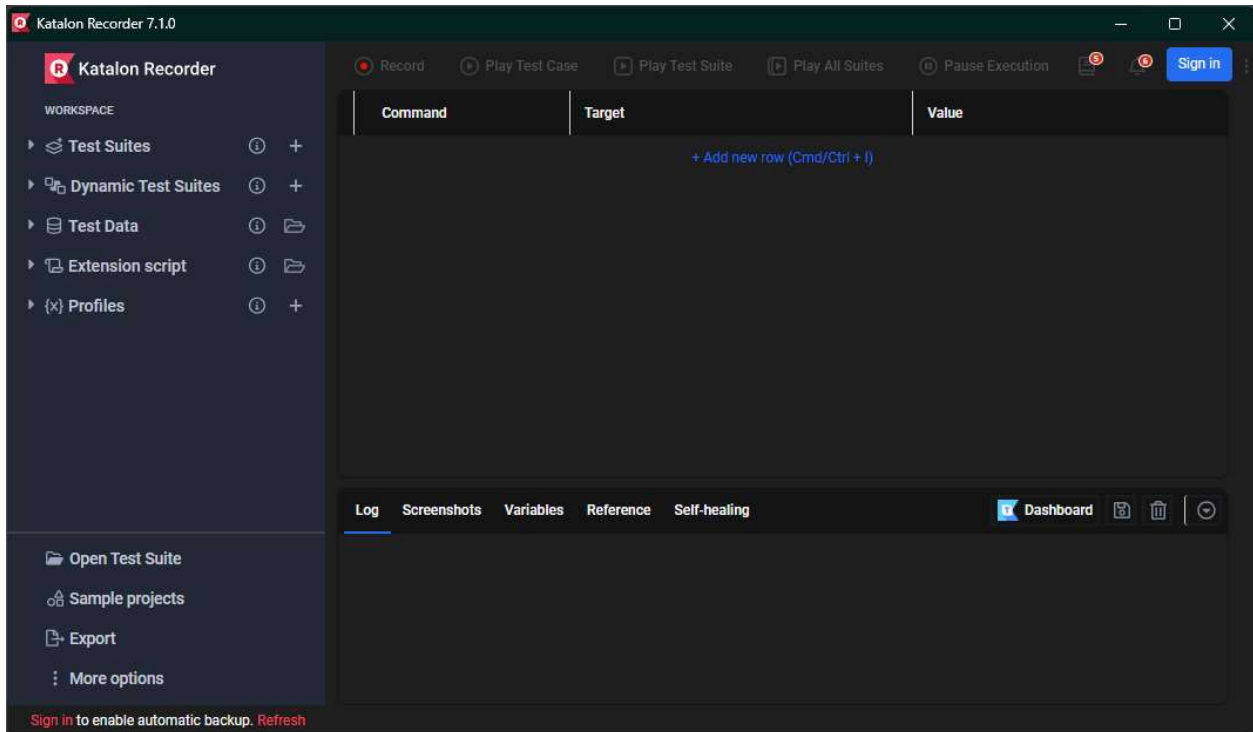
**Integration Challenges:** Selenium IDE does not easily integrate with other testing frameworks or continuous integration tools, making it harder to incorporate into a larger testing strategy.

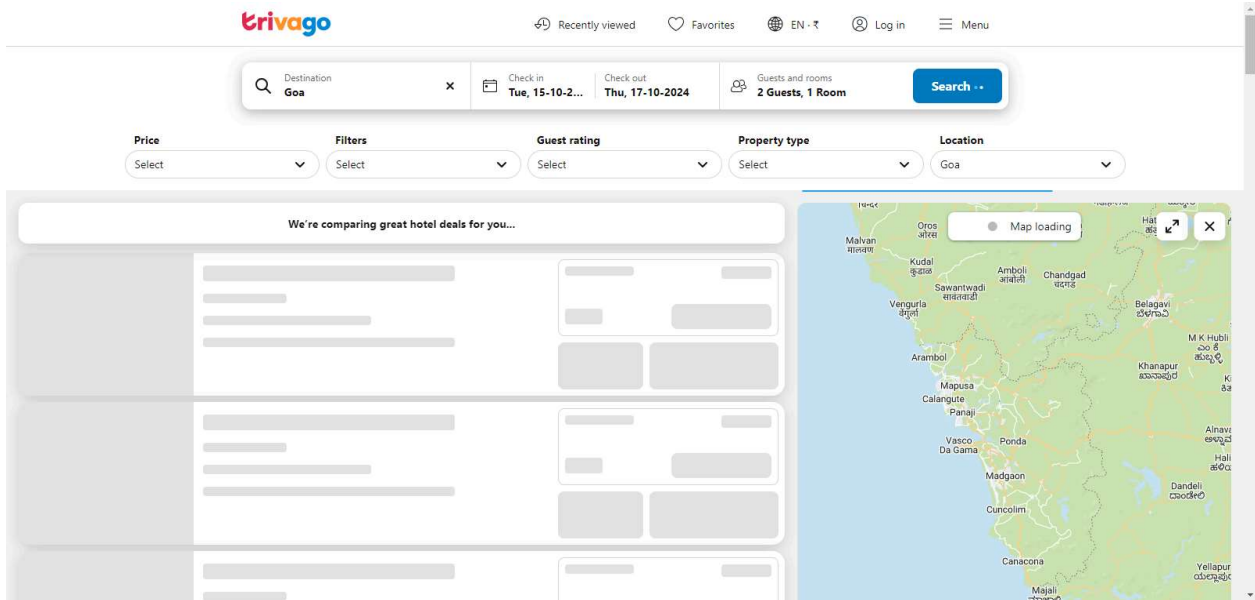
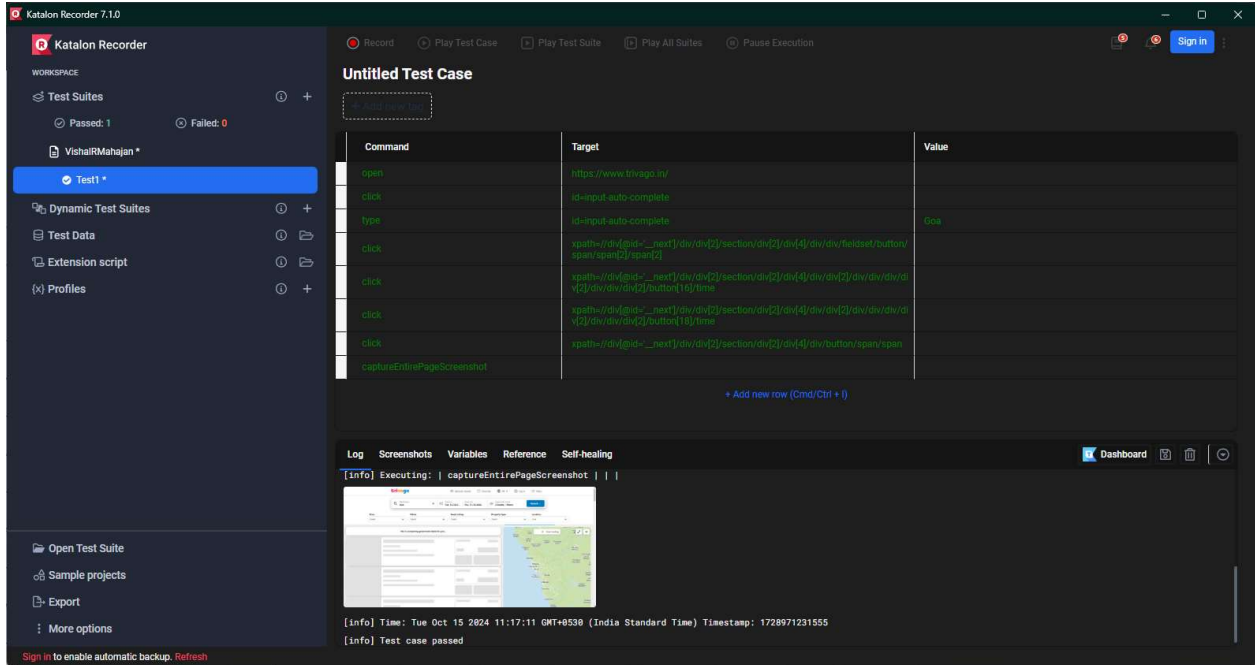
**No Support for Complex Scenarios:** For testing scenarios that require complex user interactions (like drag-and-drop), the IDE may not provide adequate support.

**Limited Data-Driven Testing:** Selenium IDE lacks robust support for data-driven testing, which is essential for validating applications against various input scenarios.

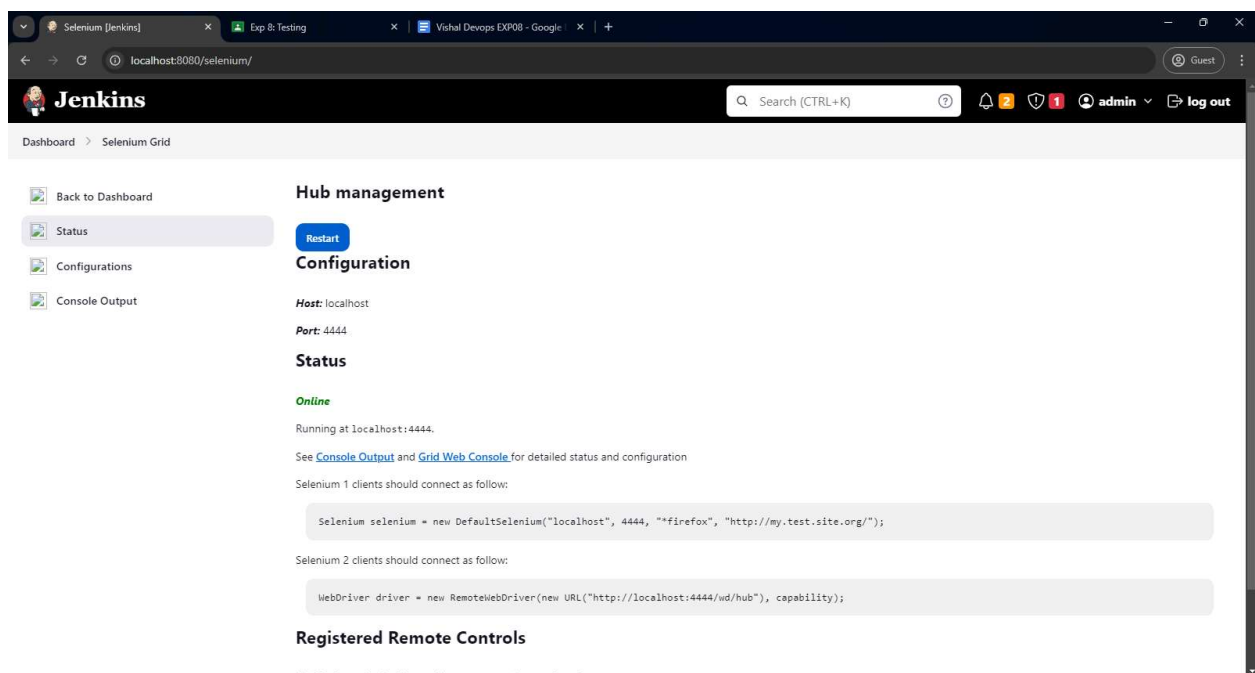
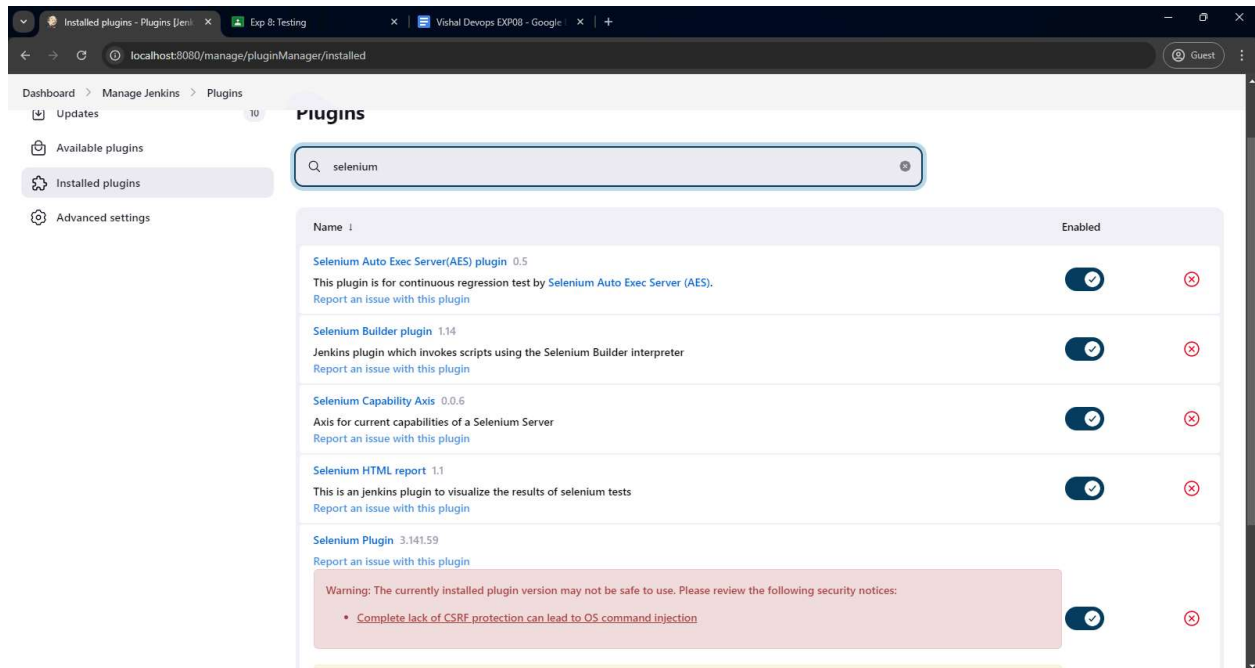
b. Execute following (Refer the shared material) and attach screenshots:

Create and run a test case on Chrome/Firefox browser with selenium IDE addon





# Create a Maven Project in Jenkins and run selenium tests using selenium Grid



Selenium global configuration | x Exp 8: Testing x Vishal Devops EXP08 - Google | x | +

localhost:8080/selenium/add

Guest

# Jenkins

Search (CTRL+K)

admin log out

Dashboard > Selenium Grid

Plugin home

Configurations

Nodes matching configurations

New configuration

## New configuration

Name of the configuration

VishalRMahajan

Matcher

☒ Match all nodes ?

☐ Match no nodes ?

☐ Match nodes from a label expression ?

Type

☐ Custom RC node configuration ?

☒ Custom web driver node configuration ?

Preferred port ?

4445

Selenium global configuration | x Exp 8: Testing x Vishal Devops EXP08 - Google | x | +

localhost:8080/selenium/add

Guest

Dashboard > Selenium Grid

☐ Custom RC node configuration ?

☒ Custom web driver node configuration ?

Preferred port ?

4445

Max node sessions

5

X11 display ?

Internet Explorer

Maximum instances ?

1

Version ?

IE driver path ?

Selenium global configuration

Exp 8: Testing

Vishal Devops DP08 - Google

localhost:3080/selenium/add

Guest

Dashboard > Selenium Grid

IE driver path ?

Advanced

Firefox

Maximum instances ?

5

Version ?

Advanced

Chrome

Maximum instances ?

5

Version ?

Selenium global configuration

Exp 8: Testing

Vishal Devops DP08 - Google

localhost:3080/selenium/add

Guest

Dashboard > Selenium Grid

Maximum instances ?

5

Version ?

Chromedriver path ?

⚠ Must not be empty unless it is already defined from a previous chrome browser definition or already defined in the path

Add browser

☐ File configuration ?

☐ JSON configuration ?

Save

REST APIJenkins 2.414.1

Type	Delete	Name ↓	Matching type	Description summary
		VishalRMahajan	Match all nodes	1 instances of Internet Explorer (version : Not specified) 5 instances of Firefox (version : Not specified) 5 instances of Chrome (version : Not specified)

Vishal\_Selenium Config [Jenkins] x +

localhost:8080/job/Vishal\_Selenium/configure

Guest (2)

Jenkins

Search (CTRL+K)

admin log out

Dashboard > Vishal\_Selenium > Configuration

### Configure

- General
- Source Code Management
- Build Triggers
- Build Environment
- Pre Steps
- Build
- Post Steps
- Build Settings
- Post-build Actions

### General

Enabled

Description

This is VishalMahajan Selenium Project. TEITA4 Roll no 62

Plain text [Preview](#)

- ☐ Commit agent's Docker container
- ☐ Define a Docker template
- ☐ Discard old builds
- ☐ GitHub project
- ☐ This project is parameterized
- ☐ Throttle builds

Save Apply

Vishal\_Selenium Config [Jenkins] x +

localhost:8080/job/Vishal\_Selenium/configure

Guest (2)

Jenkins

Search (CTRL+K)

admin log out

Dashboard > Vishal\_Selenium > Configuration

### Configure

- General
- Source Code Management
- Build Triggers
- Build Environment
- Pre Steps
- Build
- Post Steps
- Build Settings
- Post-build Actions

### Git

Repositories

Repository URL

https://github.com/VishalMahajan/SeleniumProjectPractice.git

Credentials

- none -

+ Add

Advanced

Add Repository

Branches to build

Branch Specifier (blank for 'any')

\*/master

Save Apply



Vishal\_Selenium Config [Jenkins] x +

localhost:8080/job/Vishal\_Selenium/configure

Guest (2)

Dashboard > Vishal\_Selenium > Configuration

### Configure

- General
- Source Code Management
- Build Triggers
- Build Environment
- Pre Steps
- Build
- Post Steps
- Build Settings
- Post-build Actions

#### Build

Root POM ?  
pom.xml

Goals and options ?  
clean compile test

Advanced ▾

#### Post Steps

☐ Run only if build succeeds

☐ Run only if build succeeds or is unstable

☒ Run regardless of build result

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

Save Apply

Vishal\_Selenium Config [Jenkins] x +

localhost:8080/job/Vishal\_Selenium/configure

Guest (2)

Dashboard > Vishal\_Selenium > Configuration

### Configure

- General
- Source Code Management
- Build Triggers
- Build Environment
- Pre Steps
- Build
- Post Steps
- Build Settings
- Post-build Actions

#### Build Settings

☐ E-mail Notification

#### Post-build Actions

add post-build step ▾

≡ Publish Selenium Html Report

Selenium tests results location  
relative to [workspace](#)

target

☒ Set build result state to failure if an exception occurred while parsing result files

Add post-build action ▾

Save Apply

REST API Jenkins 2.462.3

Vishal\_Selenium #1 Console [Jenkins] +

localhost:8080/job/Vishal\_Selenium/1/console

Guest (2)

Jenkins

Search (CTRL+K)

admin log out

Dashboard > Vishal\_Selenium > #1 > Console Output

Status

Changes

Console Output

Edit Build Information

Delete build '#1'

Git Build Data

Redeploy Artifacts

Selenium HTML Report

See Fingerprints

Console Output

Download Copy View as plain text

Started by user admin

Running as SYSTEM

Building on the built-in node in workspace C:\ProgramData\Jenkins\jenkins\workspace\Vishal\_Selenium

The recommended git tool is: NONE

No credentials specified

Cloning the remote Git repository

Cloning repository https://github.com/VishalRMahajan/SeleniumProjectPractice.git

> C:\Program Files\Git\bin\git.exe init C:\ProgramData\Jenkins\jenkins\workspace\Vishal\_Selenium # timeout=10

Fetching upstream changes from https://github.com/VishalRMahajan/SeleniumProjectPractice.git

> C:\Program Files\Git\bin\git.exe --version # timeout=10

> git --version # 'git version 2.34.1.windows.1'

> C:\Program Files\Git\bin\git.exe fetch --tags --force --progress -- https://github.com/VishalRMahajan/SeleniumProjectPractice.git +refs/heads/\*:refs/remotes/origin/\* # timeout=10

> C:\Program Files\Git\bin\git.exe config remote.origin.url https://github.com/VishalRMahajan/SeleniumProjectPractice.git # timeout=10

> C:\Program Files\Git\bin\git.exe config --add remote.origin.fetch +refs/heads/\*:refs/remotes/origin/\* # timeout=10

Avoid second fetch

> C:\Program Files\Git\bin\git.exe rev-parse "refs/remotes/origin/master^{commit}" # timeout=10

Checking out Revision e4d6ed8719a8f959346555f9a86feb825768cabf (refs/remotes/origin/master)

> C:\Program Files\Git\bin\git.exe config core.sparsecheckout # timeout=10

> C:\Program Files\Git\bin\git.exe checkout -f e4d6ed8719a8f959346555f9a86feb825768cabf # timeout=10

Commit message: "adding the new developed scripts"

First time build. Skipping changelog.

Parsing POMs

Discovered a new module com.qa:Selenium Selenium

Modules changed, recalculating dependency graph

Vishal\_Selenium #1 Console [Jenkins] +

localhost:8080/job/Vishal\_Selenium/1/console

Guest (2)

Jenkins

Search (CTRL+K)

admin log out

Dashboard > Vishal\_Selenium > #1 > Console Output

[INFO] Compiling 49 source files with javac [debug target 1.8] to target\classes

[WARNING] bootstrap class path not set in conjunction with -source 8

[INFO] /C:/ProgramData/Jenkins/jenkins/workspace/Vishal\_Selenium/src/main/java/com/qa/Selenium/HiddenElements.java: Some input files use or override a deprecated API.

[INFO] /C:/ProgramData/Jenkins/jenkins/workspace/Vishal\_Selenium/src/main/java/com/qa/Selenium/HiddenElements.java: Recompile with -Xlint:deprecation for details.

[INFO]

[INFO] --- resources:3.3.1:testResources (default-testResources) @ Selenium ---

[INFO] skip non existing resourceDirectory C:\ProgramData\Jenkins\jenkins\workspace\Vishal\_Selenium\src\test\resources

[INFO]

[INFO] --- compiler:3.11.0:testCompile (default-testCompile) @ Selenium ---

[INFO] Changes detected - recompiling the module! :dependency

[INFO] Compiling 9 source files with javac [debug target 1.8] to target\test-classes

[WARNING] bootstrap class path not set in conjunction with -source 8

[INFO] /C:/ProgramData/Jenkins/jenkins/workspace/Vishal\_Selenium/src/test/java/waits/ImplicitWait.java: Some input files use or override a deprecated API.

[INFO] /C:/ProgramData/Jenkins/jenkins/workspace/Vishal\_Selenium/src/test/java/waits/ImplicitWait.java: Recompile with -Xlint:deprecation for details.

[INFO]

[INFO] --- surefire:3.1.2:test (default-test) @ Selenium ---

[JENKINS] Recording test results

[INFO] -----

[INFO] BUILD SUCCESS

[INFO] -----

[INFO] Total time: 9.724 s

[INFO] Finished at: 2024-10-22T11:14:04+05:30

[INFO] -----

Waiting for Jenkins to finish collecting data

[JENKINS] Archiving C:\ProgramData\Jenkins\jenkins\workspace\Vishal\_Selenium\pom.xml to com.qa:Selenium/0.0.1-SNAPSHOT/Selenium-0.0.1-SNAPSHOT.pom

channel stopped

Publishing Selenium report...

Copying the reports.

Finished: SUCCESS