# Experiment 06

**Aim:**

*Install and run Selenium automation tests in Jenkins using Maven.*

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**Theory & Key Concepts**

- **Jenkins:**
  Jenkins is an open-source automation server that enables developers to implement Continuous Integration (CI) and Continuous Deployment (CD) pipelines for their projects. By automating repetitive tasks—such as builds, tests, and deployments—Jenkins helps deliver reliable and robust software. Integration with testing frameworks ensures every code change is automatically validated.
- **Maven:**
  Maven is a build automation and dependency management tool for Java-based projects. It standardizes project configuration through its pom.xml file, where you define project details, dependencies (libraries required for your tests), plugins (such as Surefire and Failsafe for running unit and integration tests), and build goals. Maven makes it easy to manage dependencies and plugins and generate test reports automatically.
- **Selenium:**
  Selenium lets you automate browser tasks and web application tests. Selenium scripts can be written in Java and organized as Maven projects, streamlining dependency management and portability. Maven brings in Selenium and relevant testing libraries through the pom.xml file.

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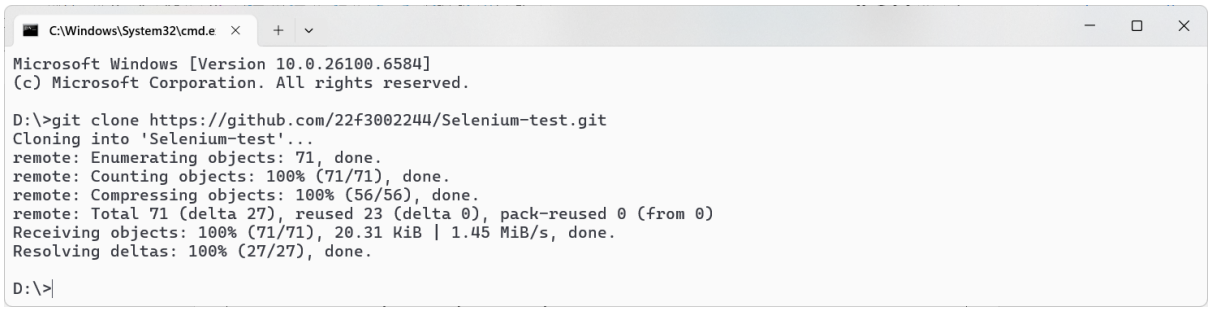
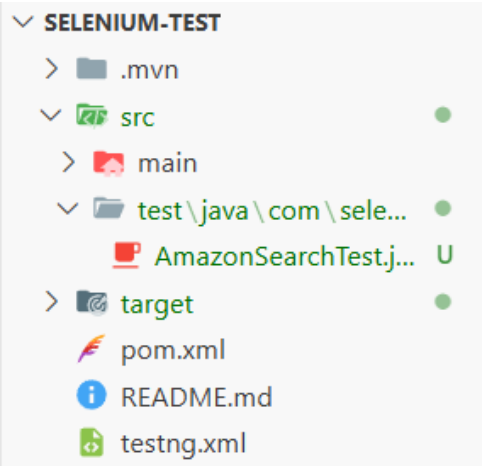
**Detailed Steps to Complete the Experiment**

1. **Create a Maven Project**

- Initialize a new Maven project on your machine or clone a starter repository.
  - Example: https://github.com/HumayunK01/Selenium-test



- Directory structure will look like:




**2. Write Your Selenium Automation Test Script**

- Create a Java class for your Selenium test under src/test/java/com/selenium/.
- Example:

```
package com.selenium;

import org.openqa.selenium.By;
import org.openqa.selenium.Keys;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.WebElement;
import org.openqa.selenium.chrome.ChromeDriver;
import org.openqa.selenium.support.ui.ExpectedConditions;
import org.openqa.selenium.support.ui.WebDriverWait;
import org.testng.Reporter;
import org.testng.annotations.Test;

import java.time.Duration;
import java.util.List;

public class AmazonSearchTest {

    @Test
    public void searchAmazonProduct() {
        // Set Chromedriver path
        System.setProperty("webdriver.chrome.driver",
"C:\\Users\\Admin\\SeleniumDemo\\chromedriver-
win64\\chromedriver.exe");
        WebDriver driver = new ChromeDriver();
        driver.manage().window().maximize();

        try {
            // Open Amazon India
            driver.get("https://www.amazon.in/");
```

```
            // Wait a bit for the page to load
            Thread.sleep(1000);

            // Locate the search box
            WebElement searchBox =
driver.findElement(By.id("twotabsearchtextbox"));

            // Type the search query and press ENTER
            searchBox.sendKeys("laptop" + Keys.ENTER);

            // Wait for results page to load and display results
            WebDriverWait wait = new WebDriverWait(driver,
Duration.ofSeconds(10));
            wait.until(ExpectedConditions.visibilityOfElementLoca
ted(By.cssSelector("div.s-main-slot")));

            // (Optional) Print titles of first few products
            List<WebElement> productTitles =
driver.findElements(By.cssSelector("span.a-size-medium.a-color-
base.a-text-normal"));
            for (int i = 0; i < Math.min(5,
productTitles.size()); i++) {
                System.out.println(productTitles.get(i).getText()
);
            }

        } catch (Exception e) {
            Reporter.log("Exception caught: " + e.getMessage());
        } finally {
            driver.quit();
        }
    }
}
```

3. **Configure Dependencies in pom.xml**

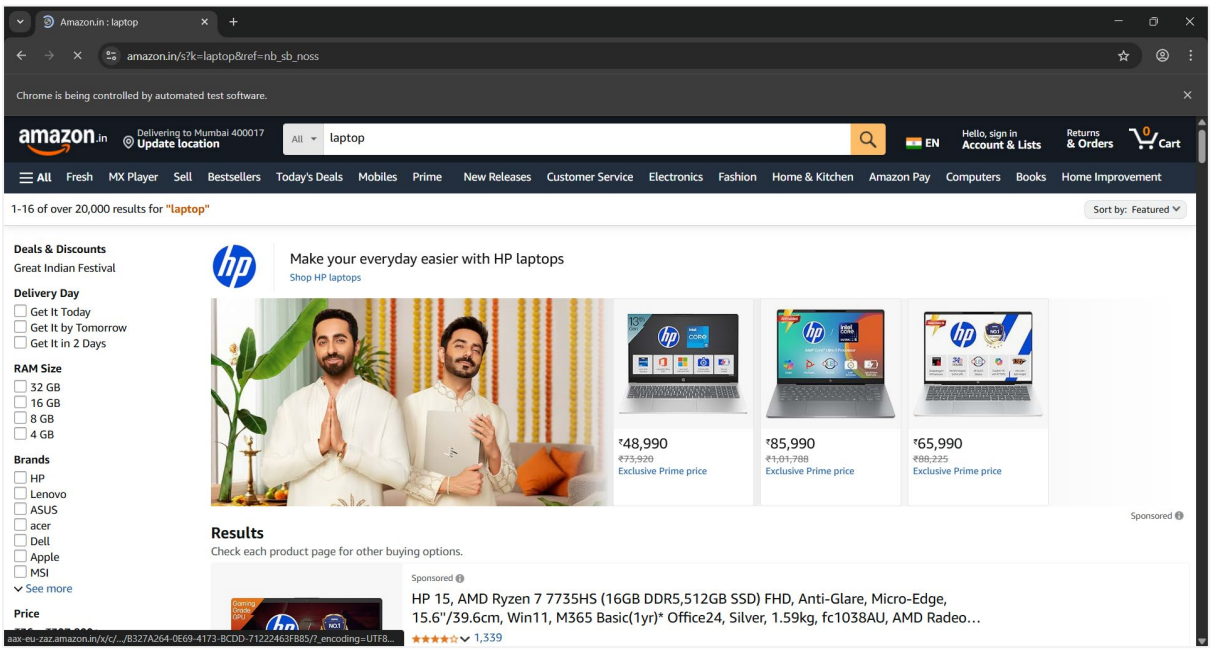
- Add Selenium, TestNG/JUnit, and Maven plugins:

```
<dependencies>
  <!-- Selenium WebDriver -->
  <dependency>
    <groupId>org.seleniumhq.selenium</groupId>
    <artifactId>selenium-java</artifactId>
    <version>[Latest Version]</version>
  </dependency>
  <!-- TestNG -->
  <dependency>
    <groupId>org.testng</groupId>
```

```
      <artifactId>testng</artifactId>
      <version>[Latest Version]</version>
    </dependency>
  </dependencies>
  <build>
    <plugins>
      <!-- Surefire plugin for running unit tests -->
      <plugin>
        <groupId>org.apache.maven.plugins</groupId>
        <artifactId>maven-surefire-plugin</artifactId>
        <version>[Latest Version]</version>
      </plugin>
    </plugins>
  </build>
```

### 4. Run Your Tests Locally

- Run test scripts in your IDE or use the terminal:




```
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 8.146 s -- in TestSuite
[INFO]
[INFO] Results:
[INFO]
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  13.453 s
[INFO] Finished at: 2025-09-22T13:52:39+05:30
[INFO] ------------------------------------------------------------------------
PS D:\Selenium-test>
```

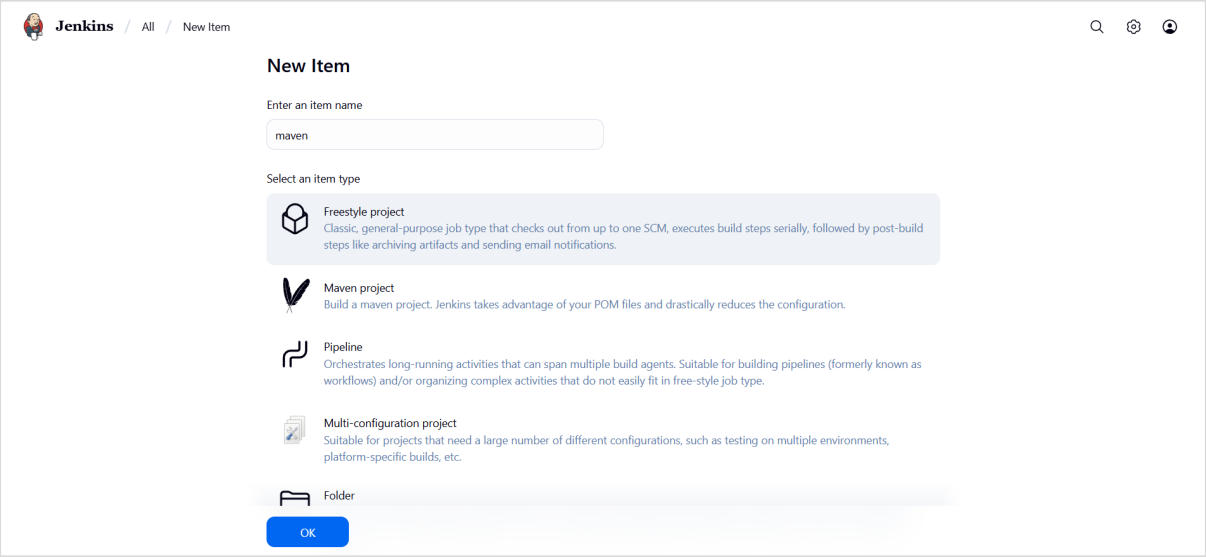
- Maven will execute all tests in the test directory and generate test reports.

## 5. Install and Start Jenkins

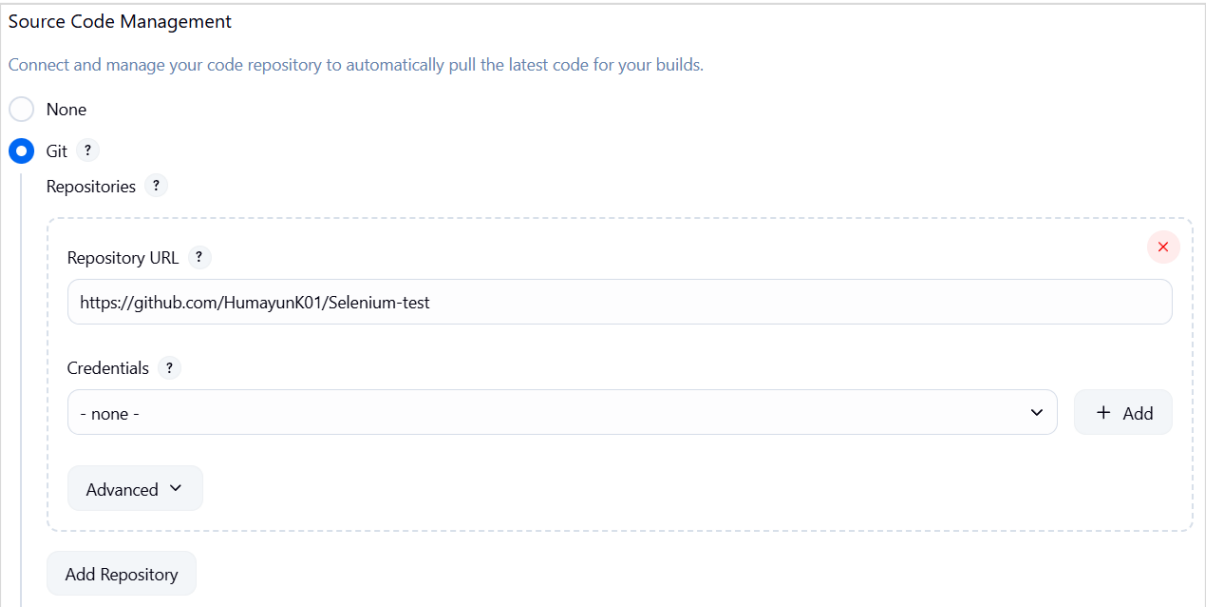
- Download and install Jenkins from jenkins.io.
- Start the Jenkins server on your machine.

## 6. Create and Configure a Jenkins Project

- Open Jenkins dashboard → Click “New Item” → Select *Freestyle Project*, give it a name.

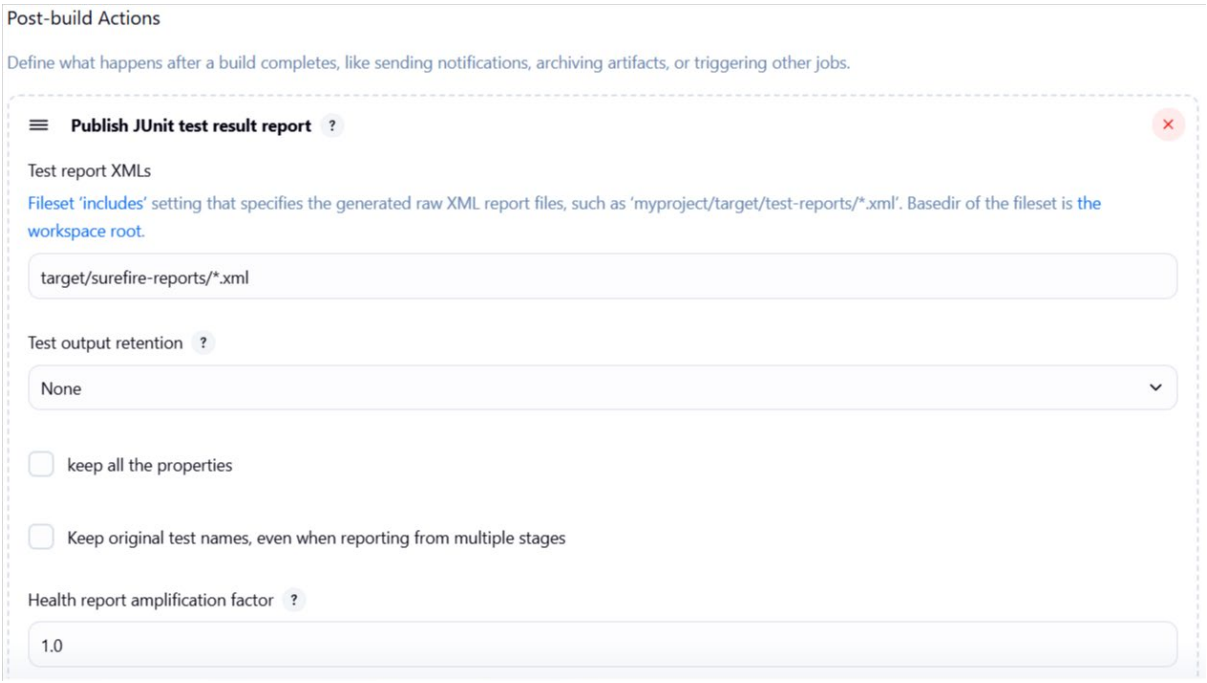



- In project configuration:
  - **Source Code Management (SCM):**
    - Connect your project repository (e.g., Git).
    - Enter repository URL and change Branch Specifier to */fix-selenium-test



- **Build Steps:**
  - Add a build step: “Invoke top-level Maven targets”
  - Goals: clean test -DTest=DemoTest


- **Post-Build Actions:**
  - Add “Publish JUnit test result report”
  - Path: target/surefire-reports/*.xml
  - Optionally, configure email notifications/reports.

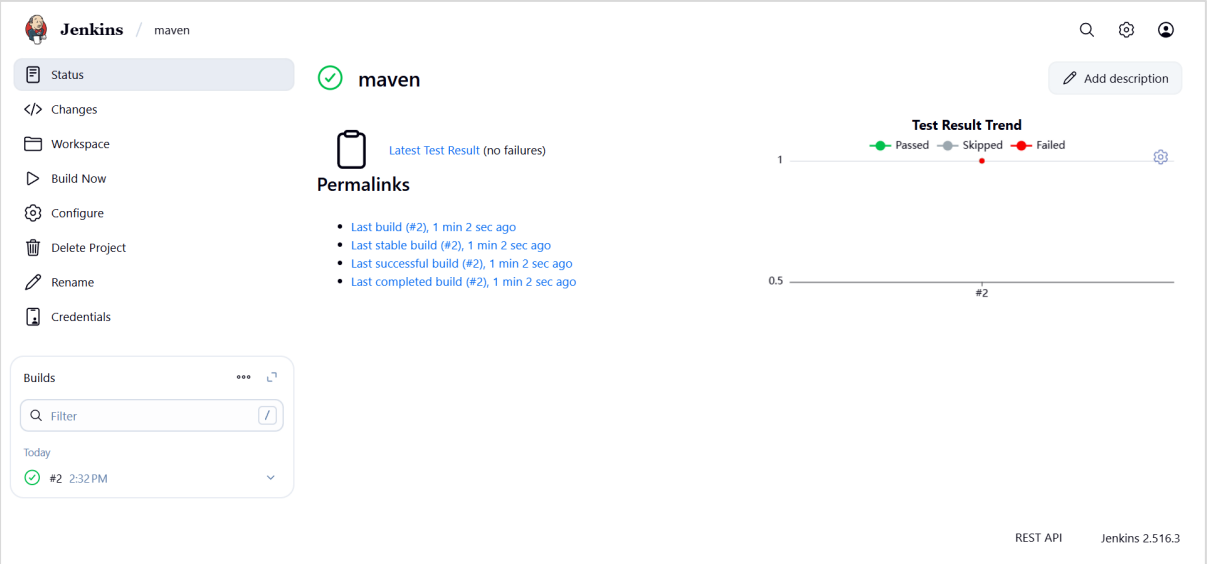



## 7. Apply and Save Configuration

- Review all settings and click “Save”.

## 8. Run Jenkins Build

- On your Jenkins job page, click “Build Now”.
- Monitor console output for compilation, test execution, and result summary.
- Check the build history, test reports, and logs for detailed feedback.




## Conclusion

By integrating Selenium, Maven, and Jenkins:

- **Continuous Testing** becomes automated: tests run on every commit.
- **Faster Feedback:** Developers are instantly notified of failures.
- **Stable Builds:** Only code passing tests moves to the next stage.
- **Scalability:** You can add test environments (agents/nodes), more test cases, and complex workflows.