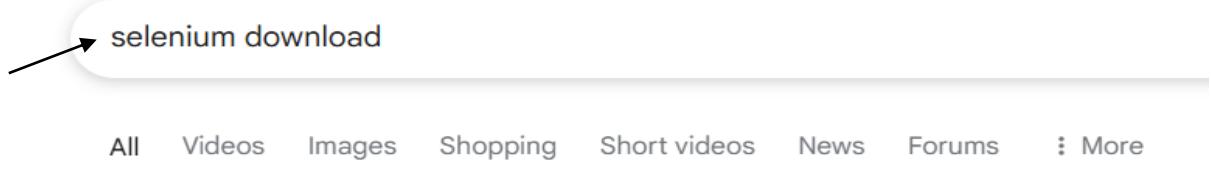


Experiment 8

Week 8

AIM:-Build and deploy a grid for Chrome and Firefox based testing.

Step1:- Download Selenium Grid



Selenium

<https://www.selenium.dev/downloads> :

Downloads

Downloads. Below is where you can find the latest releases of all the **Selenium** components. You can also find a list of previous releases, source code, and ...

Selenium Server (Grid)

The Selenium Server is needed in order to run Remote Selenium WebDriver (Grid).

Latest stable version [4.30.0](#)

To use the Selenium Server in a Grid configuration see the [documentation](#).

To run the Grid with popular browsers using Docker see the [repository](#).

To deploy the Grid to Kubernetes cluster see the Helm chart [configuration](#).

Step2:-Download Chrome Driver

chrome driver download

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Chrome for Developers

[https://developer.chrome.com › Docs › Chromedriver](https://developer.chrome.com/docs/chromedriver/) ::

Downloads | ChromeDriver - Chrome for Developers

17 Dec 2024 — Earlier Chrome versions · [ChromeDriver 114.0.5735.90](#) · [ChromeDriver 114.0.5735.90](#)
· [ChromeDriver 113.0.5672.63](#) · [ChromeDriver 113.0.5672.24](#).

Downloads



⚠ Warning: If you're using Chrome version 115 or newer, consult the [Chrome for Testing availability dashboard](#). On this dashboard, you'll find [JSON endpoints](#) to download specific ChromeDriver versions.

Earlier Chrome versions ↪

Chrome for Testing availability



This page lists the latest available cross-platform Chrome for Testing versions and assets per Chrome

Consult [our JSON API endpoints](#) if you're looking to build automated scripts based on Chrome for Test

Last updated @ 2025-03-28T07:09:34.087Z

Channel	Version	Revision	Status
Stable	134.0.6998.165	r1415337	<input checked="" type="checkbox"/>
<u>Beta</u>	135.0.7049.41	r1427262	<input checked="" type="checkbox"/>
<u>Dev</u>	136.0.7091.2	r1437865	<input checked="" type="checkbox"/>
<u>Canary</u>	136.0.7093.0	r1438506	<input checked="" type="checkbox"/>

Below picture address copy and paste it new tab. Automatically chrome driver downloaded

Version: 134.0.6998.165 (r1415337)

Binary	Platform	URL	HTTP status
chrome	linux64	https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/linux64/chrome-linux64.zip	200
chrome	mac-arm64	https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/mac-arm64/chrome-mac-arm64.zip	200
chrome	mac-x64	https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/mac-x64/chrome-mac-x64.zip	200
chrome	win32	https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/win32/chrome-win32.zip	200
chrome	win64	https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/win64/chrome-win64.zip	200
chromedriver	linux64	https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/linux64/chromedriver-linux64.zip	200
chromedriver	mac-arm64	https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/mac-arm64/chromedriver-mac-arm64.zip	200
chromedriver	mac-x64	https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/mac-x64/chromedriver-mac-x64.zip	200
chromedriver	win32	https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/win32/chromedriver-win32.zip	200
chromedriver	win64	https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/win64/chromedriver-win64.zip	200

https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/win64/chromedriver-win64.zip

<https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/win64/chromedriver-win64.zip>

https://storage.googleapis.com/chrome-for-testing-public/134.0.6998.165/win64/chromedriver-win64.zip - Google Search

Step3:-Download Gecko Driver

firefox driver download

All Images Videos Shopping Short videos News Forums ::



[GitHub](#)

<https://github.com/mozilla/geckodriver/releases>

⋮

You visit often

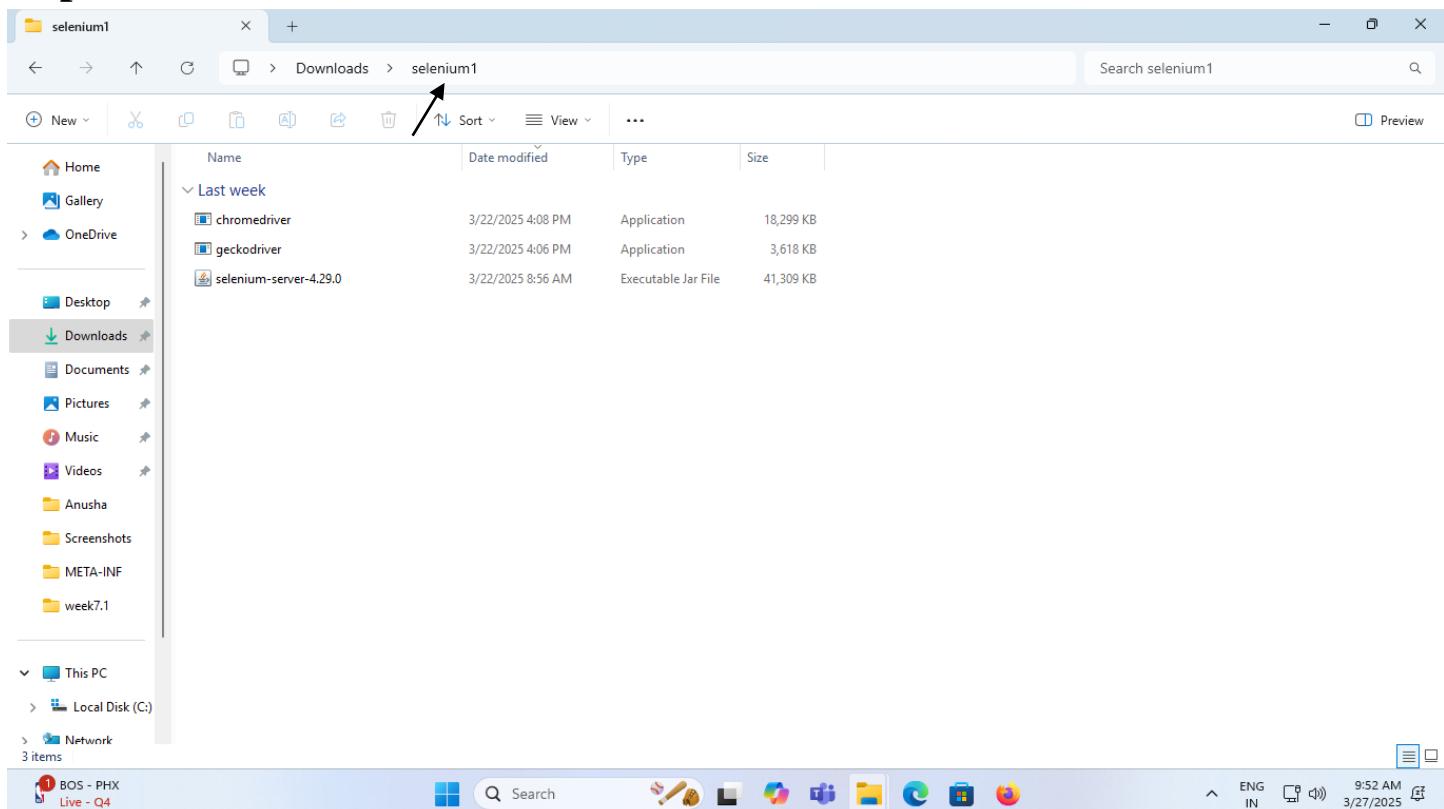
[Releases · mozilla/geckodriver](#)

25 Feb 2025 — WebDriver for Firefox. Contribute to mozilla/geckodriver development on GitHub.

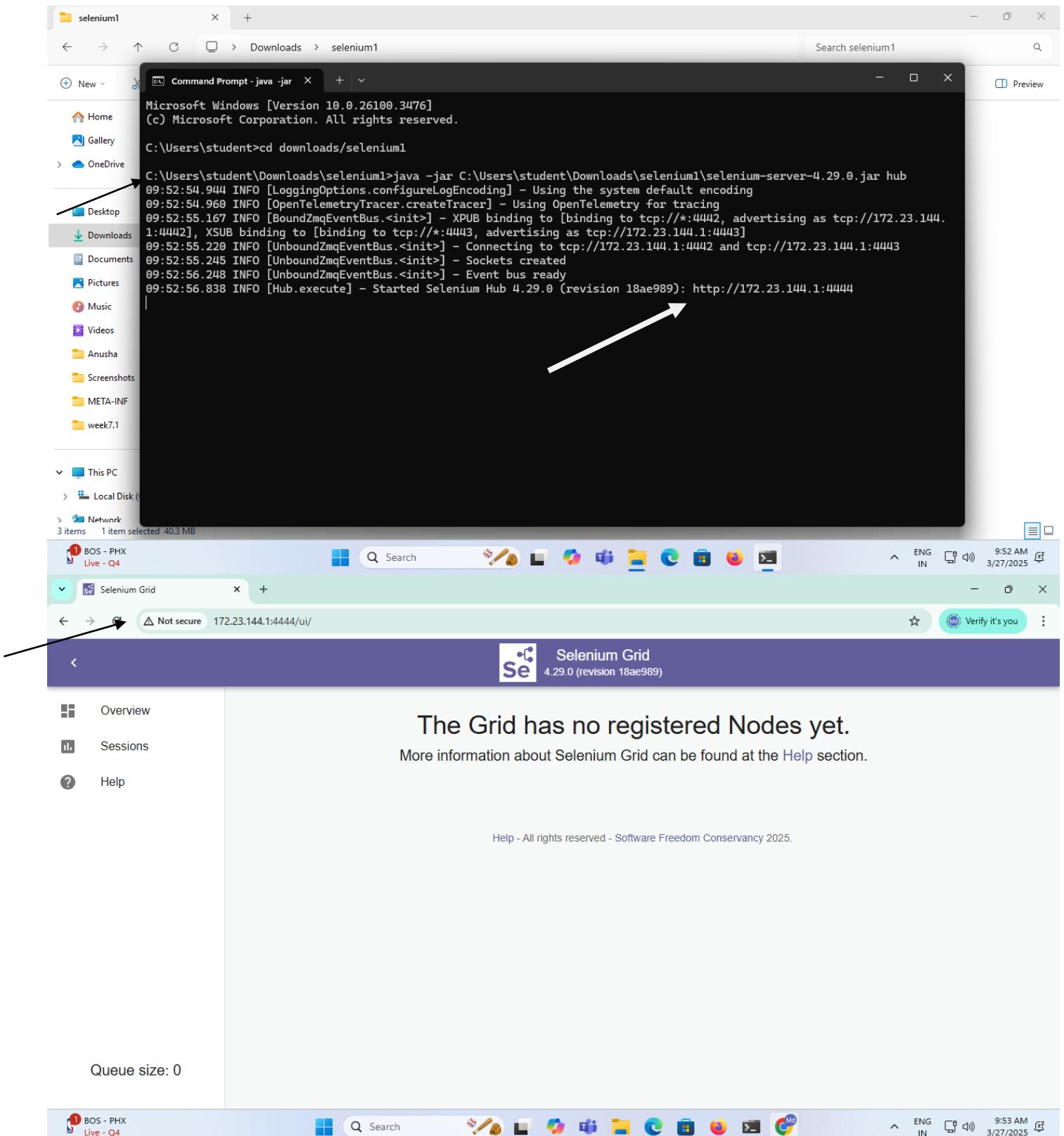
▼ Assets

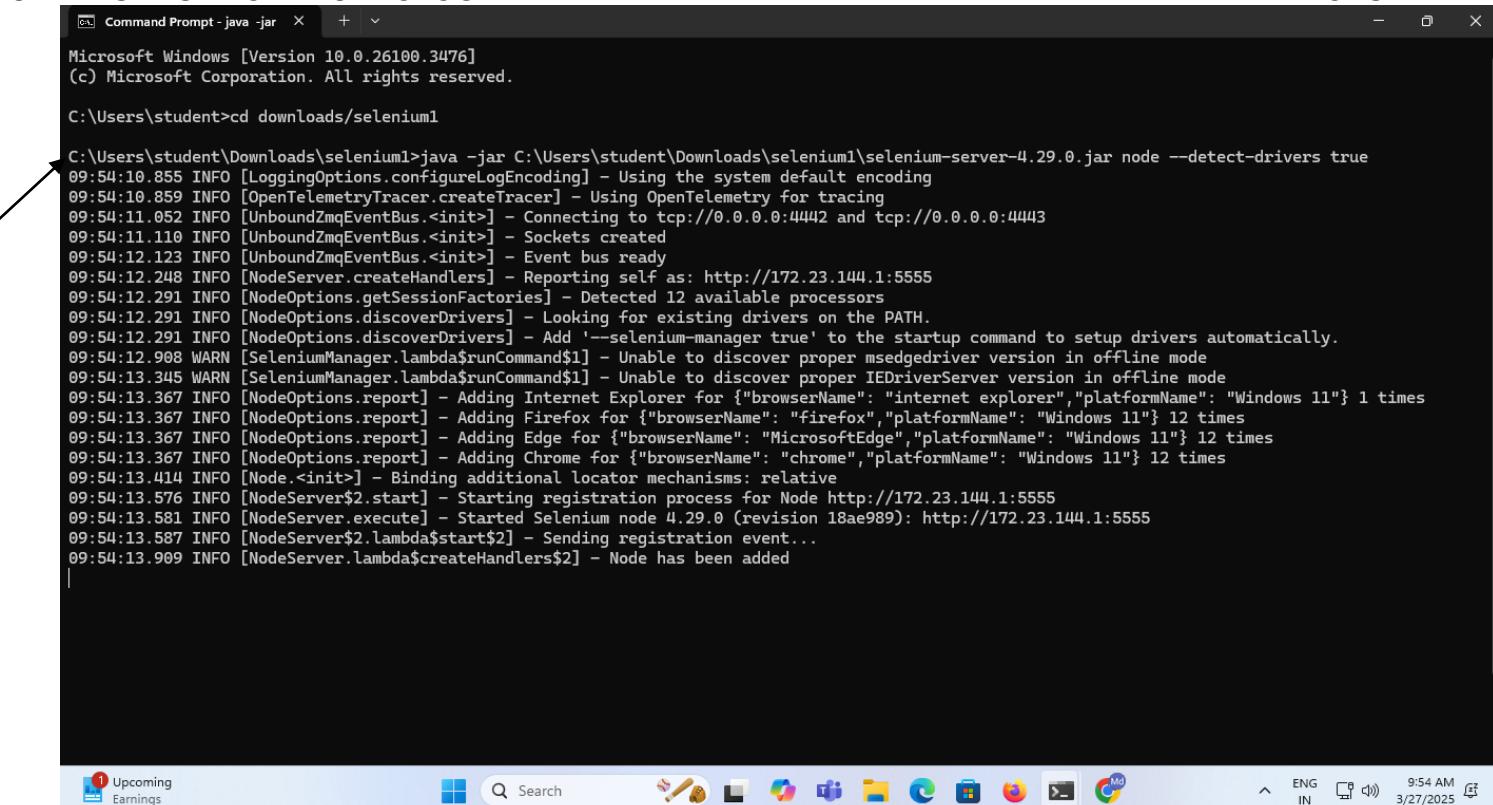
13

geckodriver-v0.36.0-linux-aarch64.tar.gz	2.07 MB	last month
geckodriver-v0.36.0-linux-aarch64.tar.gz.asc	833 Bytes	last month
geckodriver-v0.36.0-linux32.tar.gz	2.16 MB	last month
geckodriver-v0.36.0-linux32.tar.gz.asc	833 Bytes	last month
geckodriver-v0.36.0-linux64.tar.gz	2.2 MB	last month
geckodriver-v0.36.0-linux64.tar.gz.asc	833 Bytes	last month
geckodriver-v0.36.0-macos-aarch64.tar.gz	1.97 MB	last month
geckodriver-v0.36.0-macos.tar.gz	2.19 MB	last month
geckodriver-v0.36.0-win-aarch64.zip	1.62 MB	last month
geckodriver-v0.36.0-win32.zip	1.7 MB	last month
Source code (zip)		last month
Source code (tar.gz)		last month
Show all 13 assets		

Step 4:-Put all drivers one folder**Step 5:-Run hub use following command and node also separate cmd. In cmd change directory where available all drivers**

1. `java -jar selenium-server-4.29.0.jar hub`
 2. `java -jar selenium-server-4.29.0.jar node --detect-drivers true`
- Also run chrome using ip address path it will generate after running hub and verify**

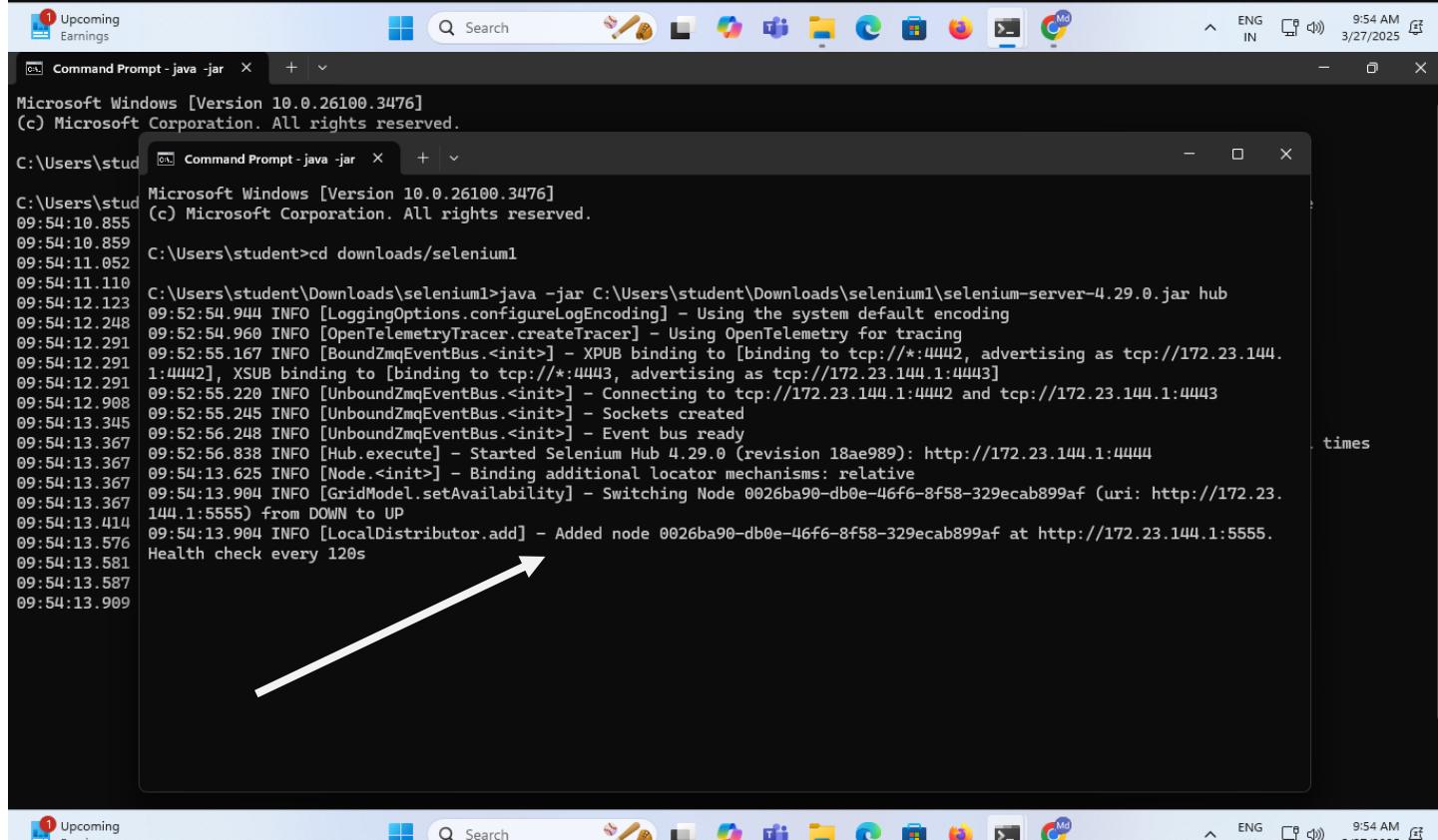




```
Microsoft Windows [Version 10.0.26100.3476]
(c) Microsoft Corporation. All rights reserved.

C:\Users\student>cd downloads\selenium1

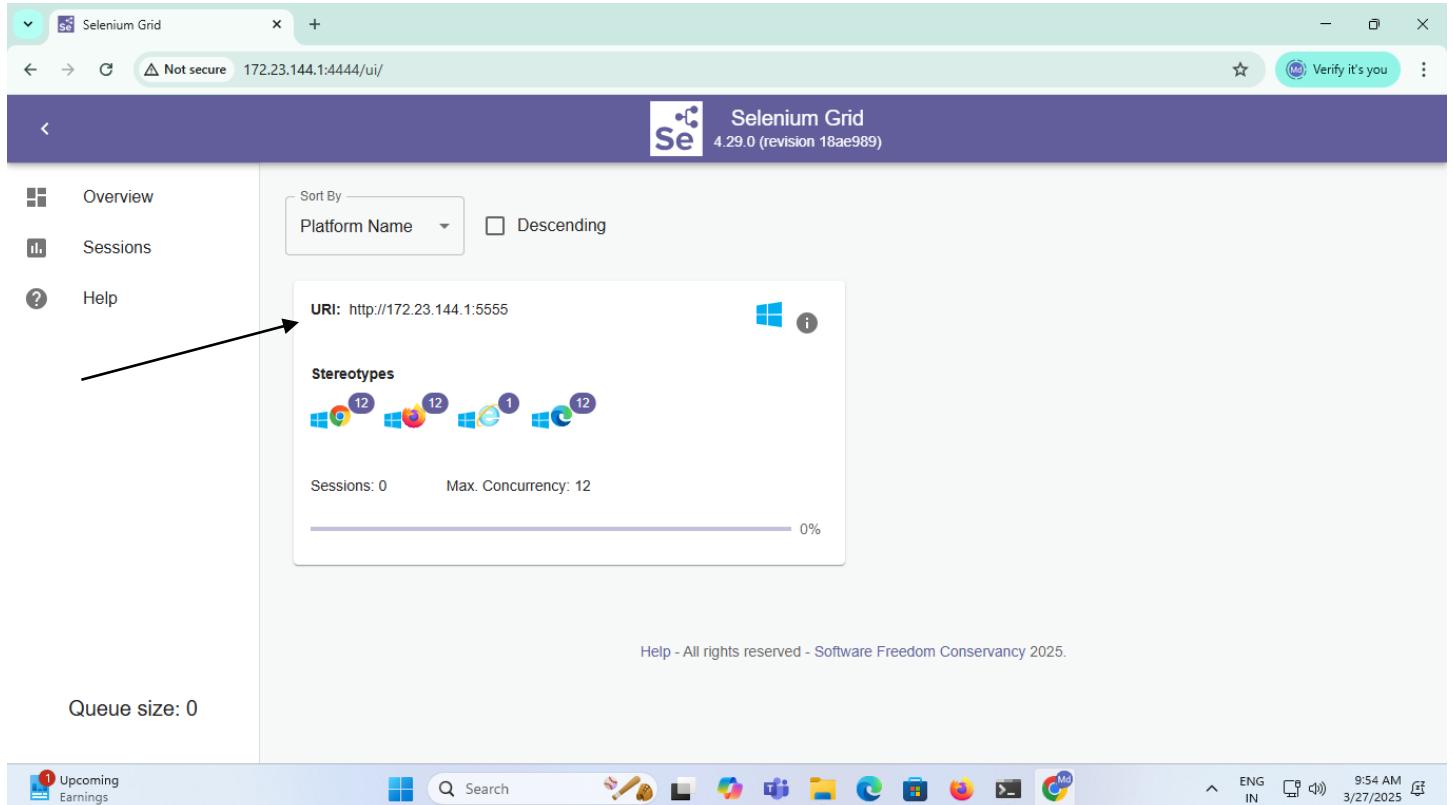
C:\Users\student\Downloads\selenium1>java -jar C:\Users\student\Downloads\selenium1\selenium-server-4.29.0.jar node --detect-drivers true
09:54:10.855 INFO [LoggingOptions.configureLogEncoding] - Using the system default encoding
09:54:10.859 INFO [OpenTelemetryTracer.createTracer] - Using OpenTelemetry for tracing
09:54:11.052 INFO [UnboundZmqEventBus.<init>] - Connecting to tcp://0.0.0.0:4442 and tcp://0.0.0.0:4443
09:54:11.110 INFO [UnboundZmqEventBus.<init>] - Sockets created
09:54:12.123 INFO [UnboundZmqEventBus.<init>] - Event bus ready
09:54:12.248 INFO [NodeServer.createHandlers] - Reporting self as: http://172.23.144.1:5555
09:54:12.291 INFO [NodeOptions.getSessionFactories] - Detected 12 available processors
09:54:12.291 INFO [NodeOptions.discoverDrivers] - Looking for existing drivers on the PATH.
09:54:12.291 INFO [NodeOptions.discoverDrivers] - Add '--selenium-manager true' to the startup command to setup drivers automatically.
09:54:12.908 WARN [SeleniumManager.lambda$runCommand$1] - Unable to discover proper msedgedriver version in offline mode
09:54:13.345 WARN [SeleniumManager.lambda$runCommand$1] - Unable to discover proper IEDriverServer version in offline mode
09:54:13.367 INFO [NodeOptions.report] - Adding Internet Explorer for {"browserName": "internet explorer", "platformName": "Windows 11"} 1 times
09:54:13.367 INFO [NodeOptions.report] - Adding Firefox for {"browserName": "firefox", "platformName": "Windows 11"} 12 times
09:54:13.367 INFO [NodeOptions.report] - Adding Edge for {"browserName": "MicrosoftEdge", "platformName": "Windows 11"} 12 times
09:54:13.367 INFO [NodeOptions.report] - Adding Chrome for {"browserName": "chrome", "platformName": "Windows 11"} 12 times
09:54:13.414 INFO [Node.<init>] - Binding additional locator mechanisms: relative
09:54:13.576 INFO [NodeServer$2.start] - Starting registration process for Node http://172.23.144.1:5555
09:54:13.581 INFO [NodeServer.execute] - Started Selenium node 4.29.0 (revision 18ae989): http://172.23.144.1:5555
09:54:13.587 INFO [NodeServer$2.lambda$start$2] - Sending registration event...
09:54:13.909 INFO [NodeServer.lambda$createHandlers$2] - Node has been added
```



```
Microsoft Windows [Version 10.0.26100.3476]
(c) Microsoft Corporation. All rights reserved.

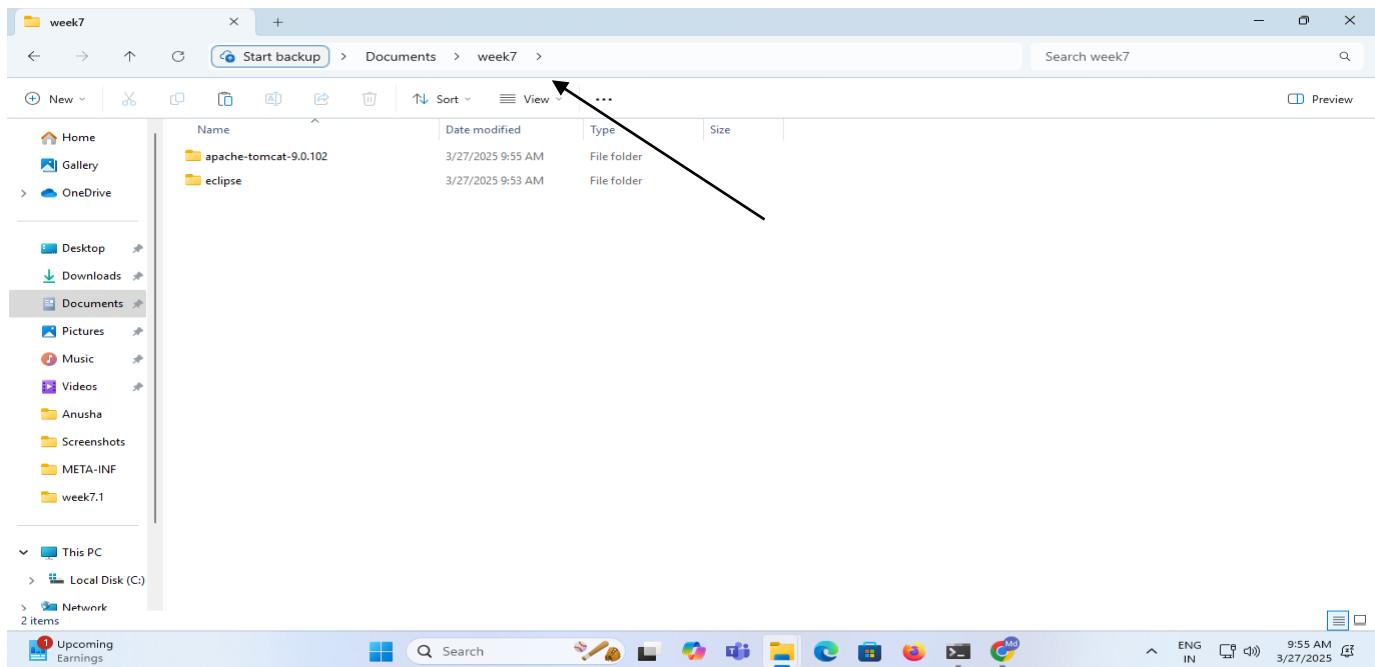
C:\Users\stud>cd downloads\selenium1

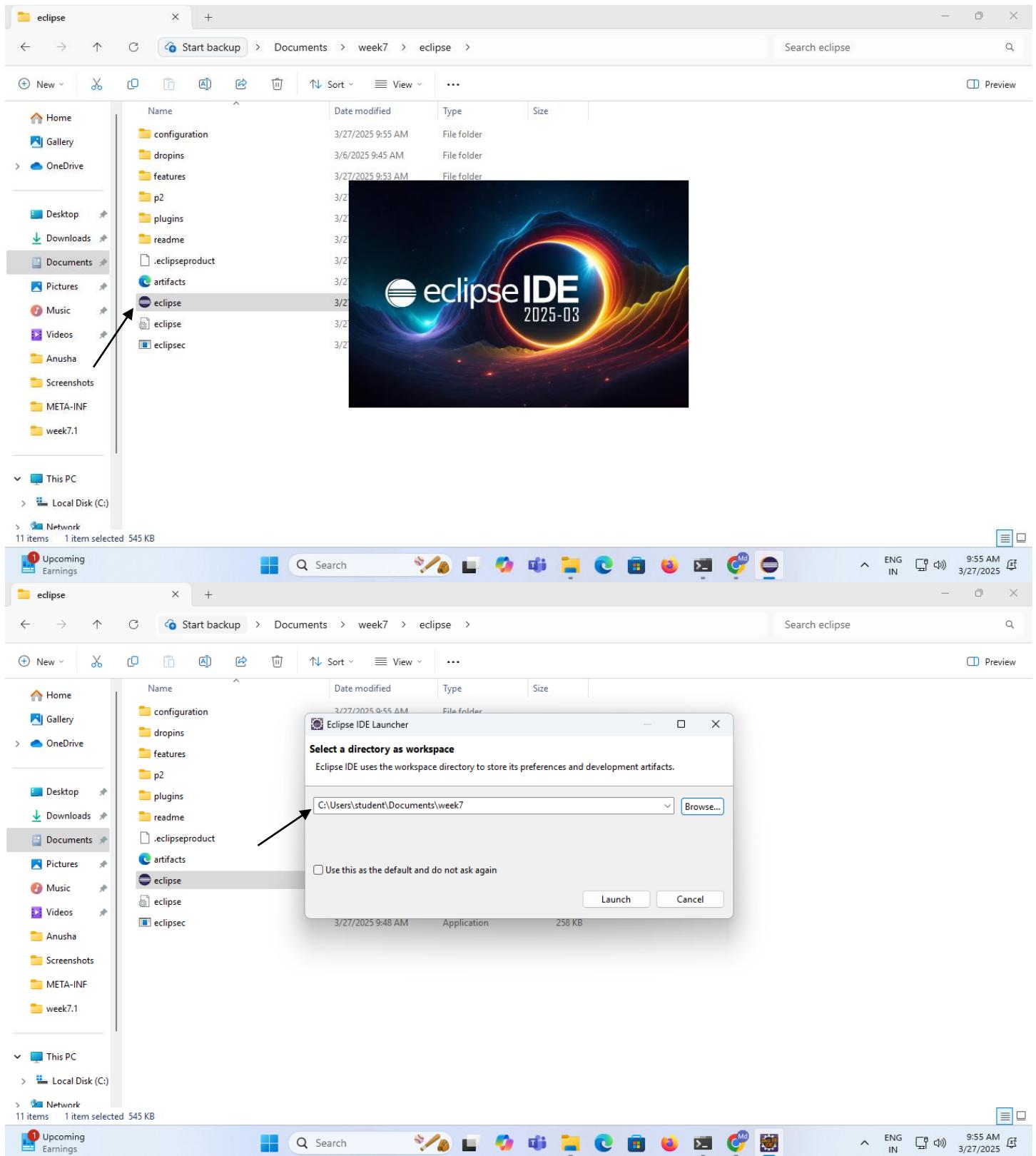
C:\Users\stud>java -jar C:\Users\student\Downloads\selenium1\selenium-server-4.29.0.jar hub
09:52:54.944 INFO [LoggingOptions.configureLogEncoding] - Using the system default encoding
09:52:54.960 INFO [OpenTelemetryTracer.createTracer] - Using OpenTelemetry for tracing
09:52:55.167 INFO [BoundZmqEventBus.<init>] - X PUB binding to [binding to tcp://*:4442, advertising as tcp://172.23.144.1:4442], XSUB binding to [binding to tcp://*:4443, advertising as tcp://172.23.144.1:4443]
09:52:55.220 INFO [UnboundZmqEventBus.<init>] - Connecting to tcp://172.23.144.1:4442 and tcp://172.23.144.1:4443
09:52:55.245 INFO [UnboundZmqEventBus.<init>] - Sockets created
09:52:56.248 INFO [UnboundZmqEventBus.<init>] - Event bus ready
09:52:56.838 INFO [Hub.execute] - Started Selenium Hub 4.29.0 (revision 18ae989): http://172.23.144.1:4444
09:54:13.625 INFO [Node.<init>] - Binding additional locator mechanisms: relative
09:54:13.904 INFO [GridModel.setAvailability] - Switching Node 0026ba90-db0e-46f6-8f58-329ecab899af (uri: http://172.23.144.1:5555) from DOWN to UP
09:54:13.904 INFO [LocalDistributor.add] - Added node 0026ba90-db0e-46f6-8f58-329ecab899af at http://172.23.144.1:5555.
Health check every 120s
```



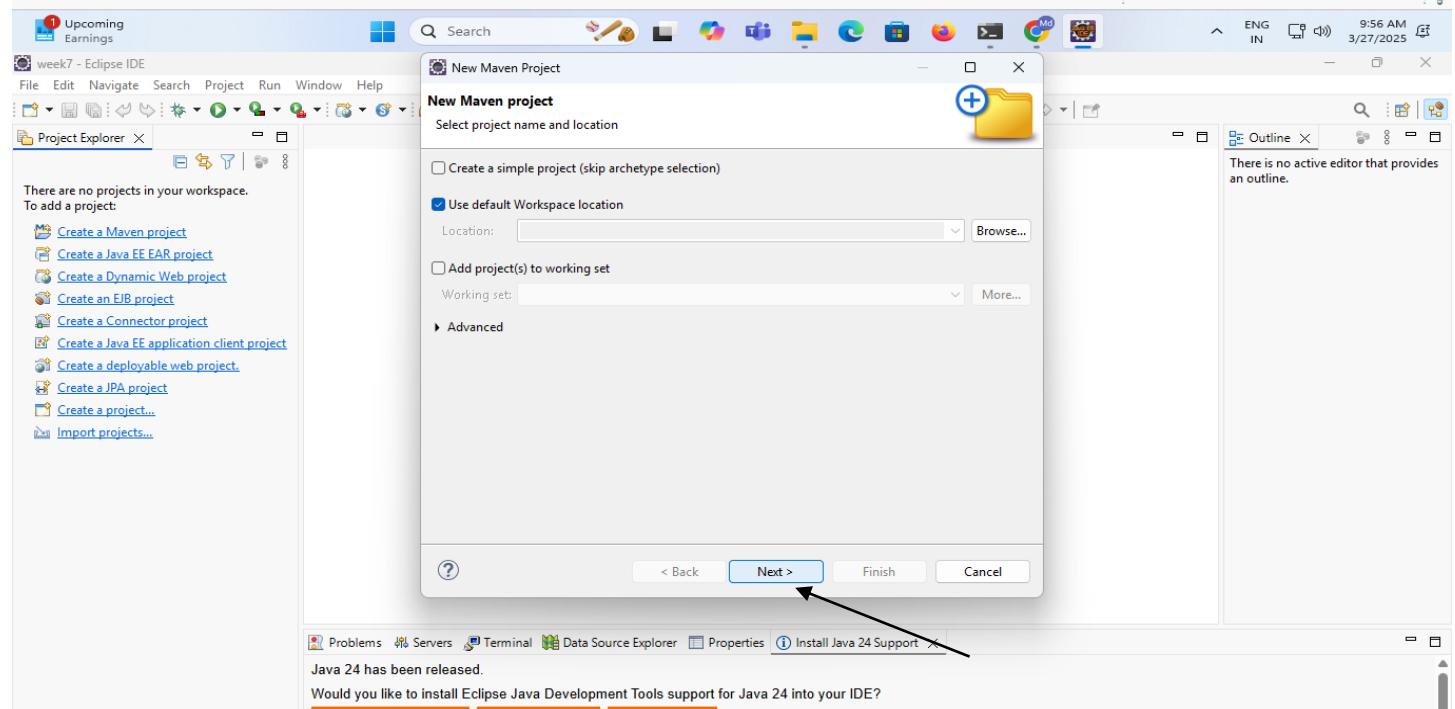
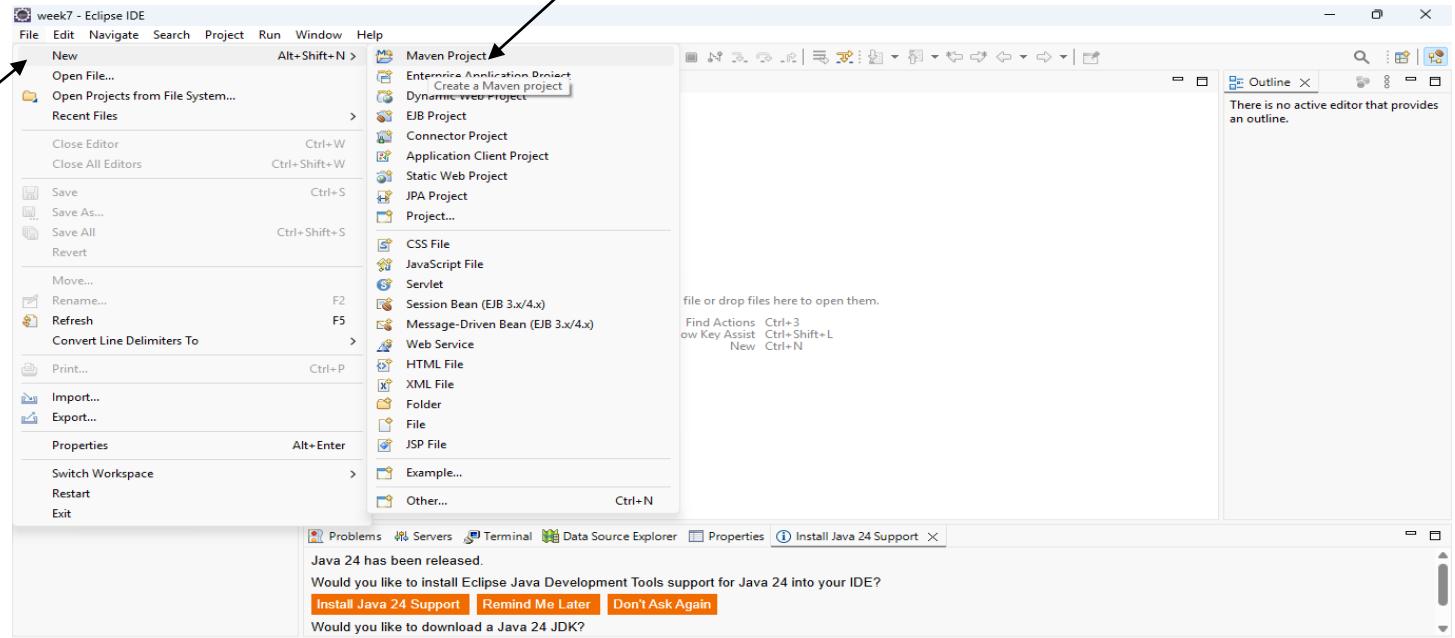
Step 6:-Open Eclipse Attach Apache Tomcat and TestNG

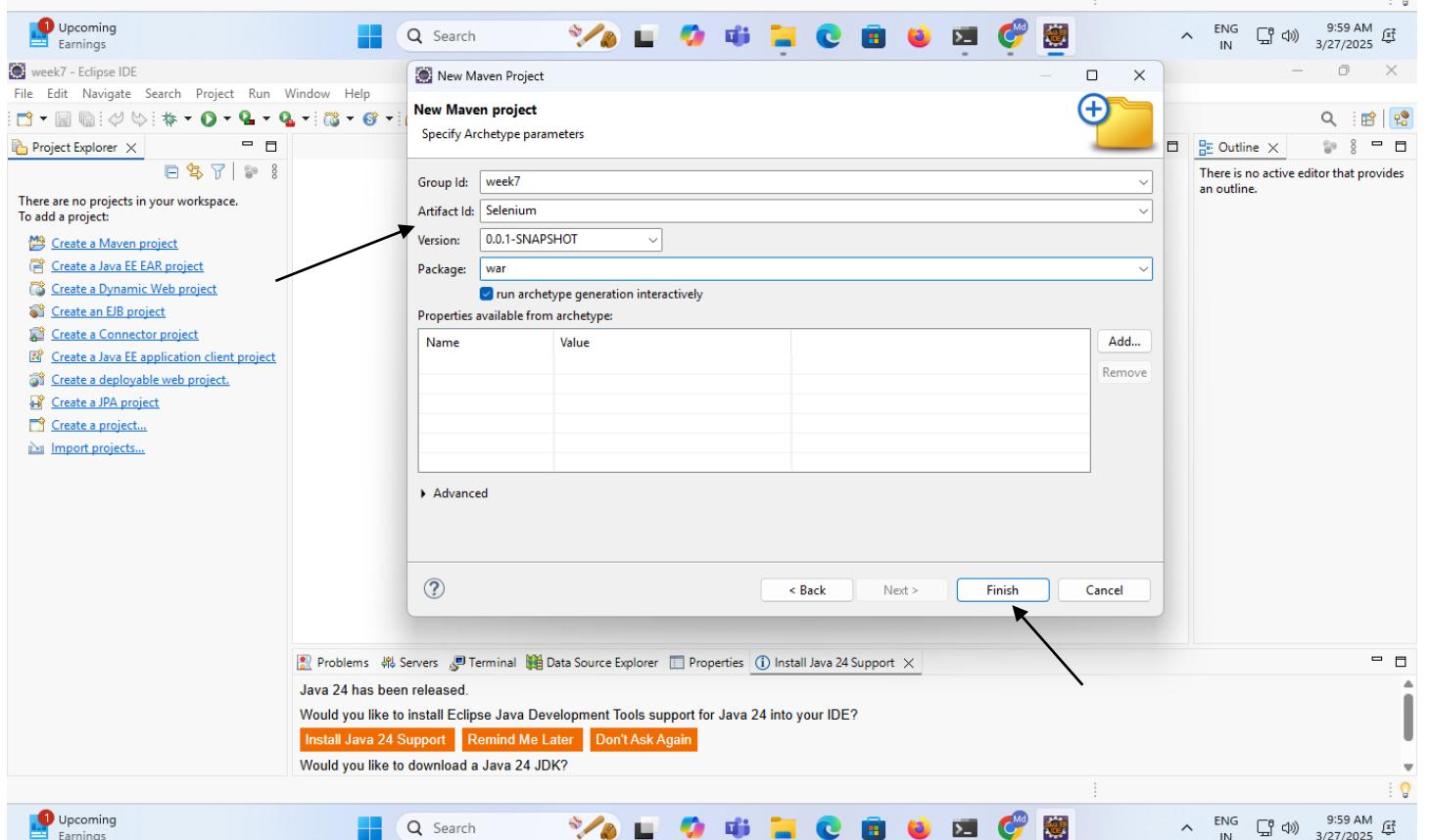
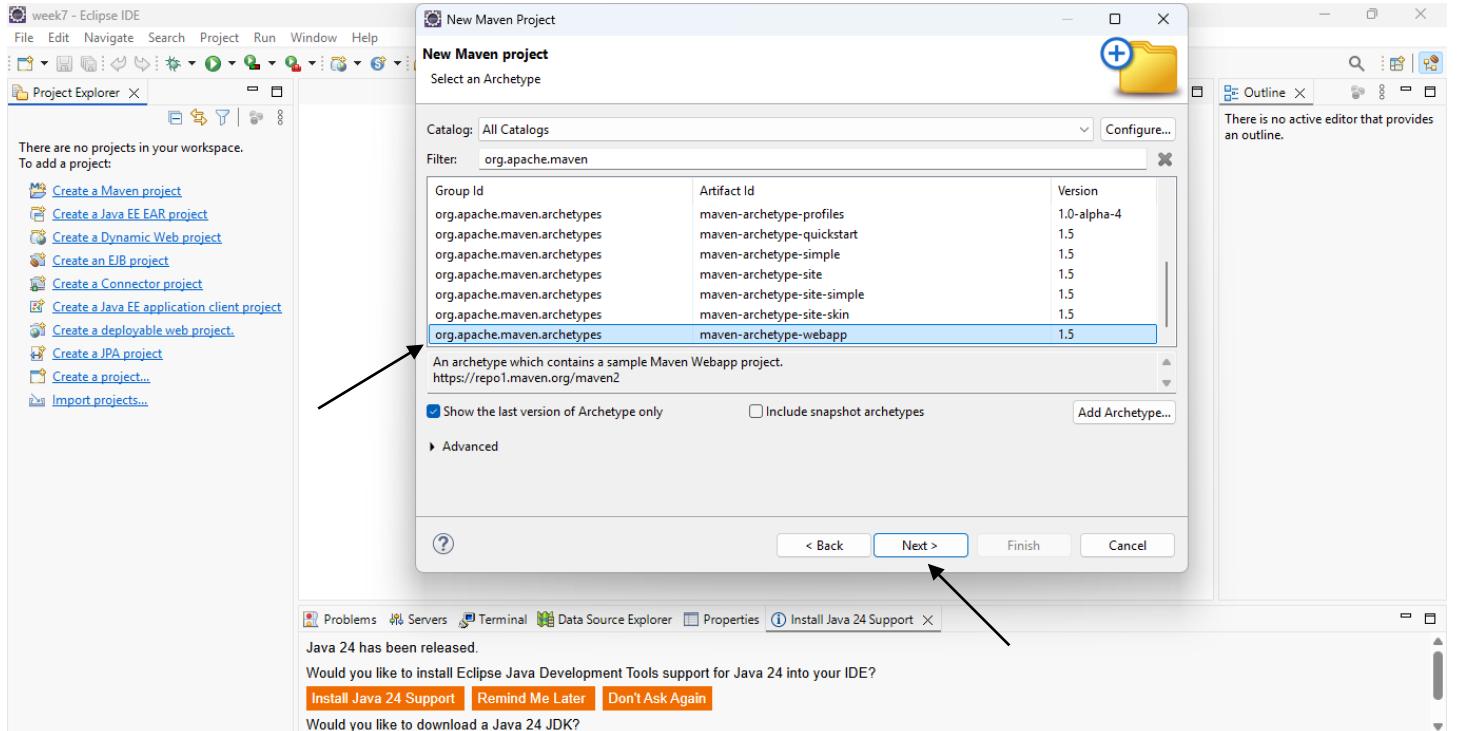
1. Store Apache and eclipse folders only single folder and lunch Eclipse same folder





3.Create maven project goto File→New→Maven Project Select→Next→select org.apache.maven.archetypes select webapp→Enter Group Id:week7 ArtifactId:selenium Package:war→Finish. Enter Y you get Build Success in console.





The screenshot shows the Eclipse IDE interface with the title bar "week7 - Eclipse IDE". The "Project Explorer" view is open, displaying a message: "There are no projects in your workspace. To add a project: Create a Maven project, Create a Java EE EAR project, Create a Dynamic Web project, Create an EJB project, Create a Connector project, Create a Java EE application client project, Create a deployable web project, Create a JPA project, Create a project... Import projects...". The "Console" view shows the output of a Maven archetype command:

```

C:\Users\student\Documents\week7\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.6.v20250130-0529\jre\bin\javaw.exe (Mar 27, 2025, 9:59:32 AM) [pid: 6728]
Progress (1): 16/17 MB
Progress (1): 16/17 MB
Progress (1): 16/17 MB
Progress (1): 17 MB

Downloaded from central: https://repo.maven.apache.org/maven2/archetype-catalog.xml (17 MB at 19 MB/s)
[INFO] Archetype repository not defined. Using the one from [org.apache.maven.archetypes:maven-archetype-webapp:1.5] found in catalog remote
[INFO] Using property: groupId = week7
[INFO] Using property: artifactId = Selenium
[INFO] Using property: version = 0.0.1-SNAPSHOT
[INFO] Using property: package = war
Confirm properties configuration:
groupId: week7
artifactId: Selenium
version: 0.0.1-SNAPSHOT
package: war
Y:

```

An arrow points from the "Console" output to the "Project Explorer" view, where a new project named "Selenium" is listed under the Maven icon.

The "Console" view also shows the completion of the Maven build process:

```

<terminated> C:\Users\student\Documents\week7\eclipse\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.6.v20250130-0529\jre\bin\javaw.exe (Mar 27, 2025, 9:59:32 AM) [pid: 6728]
[INFO] Parameter: version, Value: 0.0.1-SNAPSHOT
[INFO] Parameter: package, Value: war
[INFO] Parameter: packageInPathFormat, Value: war
[INFO] Parameter: package, Value: war
[INFO] Parameter: groupId, Value: week7
[INFO] Parameter: artifactId, Value: Selenium
[INFO] Parameter: version, Value: 0.0.1-SNAPSHOT
[WARNING] CP: Don't override file C:\Users\student\Documents\week7\Selenium\src\main\webapp
[WARNING] CP: Don't override file C:\Users\student\Documents\week7\Selenium\.mvn
[INFO] Project created from Archetype in dir: C:\Users\student\Documents\week7\Selenium
[INFO] 
[INFO] BUILD SUCCESS
[INFO] 
[INFO] Total time: 8.718 s
[INFO] Finished at: 2025-03-27T09:59:42+05:30
[INFO] 

```

A second arrow points from the "Console" output to the "Project Explorer" view, highlighting the newly created "Selenium" project node.

**3. Open Pom.xml copy paste below code this all I added dependies and plugins. Next Right click Project → Maven → Update project → ok.
(Note: If you not update every changes it will not save.)**

```

<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/maven-v4_0_0.xsd">
  <modelVersion>4.0.0</modelVersion>
  <groupId>DevOps</groupId>
  <artifactId>MyDevPipeline</artifactId>
  <packaging>war</packaging>
  <version>0.0.1-SNAPSHOT</version>
  <name>MyDevPipeline Maven Webapp</name>
  <url>http://maven.apache.org</url>
  <dependencies>
    <dependency>
      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>3.8.1</version>
      <scope>test</scope>
    </dependency>
    <!--
  
```

<https://mvnrepository.com/artifact/javax.servlet/javax.servlet-api> -->

```

    <dependency>
      <groupId>javax.servlet</groupId>
      <artifactId>javax.servlet-api</artifactId>
      <version>3.1.0</version>
      <scope>provided</scope>
    </dependency>
    <!--
  
```

<https://mvnrepository.com/artifact/org.seleniumhq.selenium/selenium-api> -->

```

    <dependency>
  
```

```
<groupId>org.seleniumhq.selenium</groupId>
<artifactId>selenium-server</artifactId>
<version>3.141.59</version>
</dependency>
<!-- https://mvnrepository.com/artifact/org.testng/testng -->
<dependency>
<groupId>org.testng</groupId>
<artifactId>testng</artifactId>
<version>6.14.3</version>    <!-- Use the latest version
available(7.11.0) -->
<scope>test</scope>
</dependency>

<dependency>
<groupId>io.github.bonigarcia</groupId>
<artifactId>webdrivermanager</artifactId>
<version>5.3.0</version>
</dependency>

</dependencies>
<build>
    <finalName>MyDevPipeline</finalName>
    <pluginManagement>
        <plugins>
            <plugin>

<groupId>org.apache.maven.plugins</groupId>
            <artifactId>maven-clean-plugin</artifactId>
            <version>3.4.0</version>
        </plugin>
        <plugin>
```

```
<groupId>org.apache.maven.plugins</groupId>
    <artifactId>maven-resources-
plugin</artifactId>
        <version>3.3.1</version>
    </plugin>
    <plugin>

<groupId>org.apache.maven.plugins</groupId>
    <artifactId>maven-compiler-
plugin</artifactId>
        <version>3.13.0</version>
        <configuration>
            <source>17.0.12</source>
            <target>17.0.12</target>
        </configuration>
    </plugin>
    <plugin>

<groupId>org.apache.maven.plugins</groupId>
    <artifactId>maven-surefire-
plugin</artifactId>
        <version>3.3.0</version>
    </plugin>
    <plugin>

<groupId>org.apache.maven.plugins</groupId>
    <artifactId>maven-war-plugin</artifactId>
        <version>3.4.0</version>
    </plugin>
    <plugin>
```

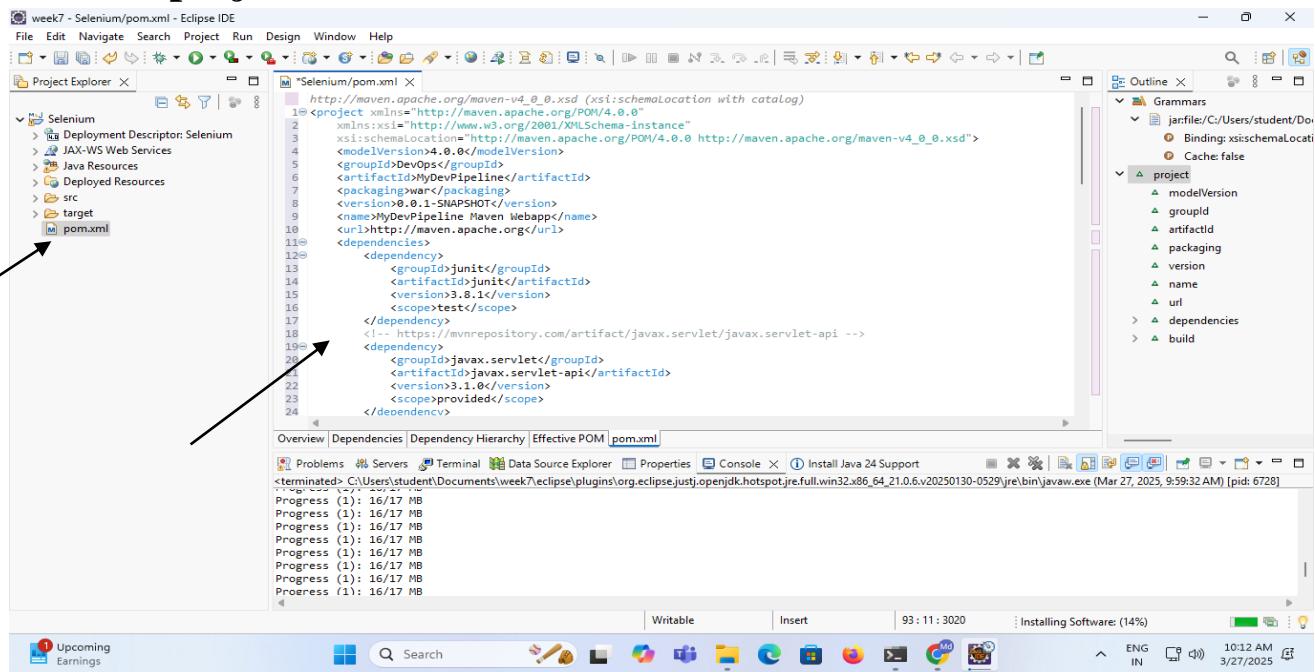
```

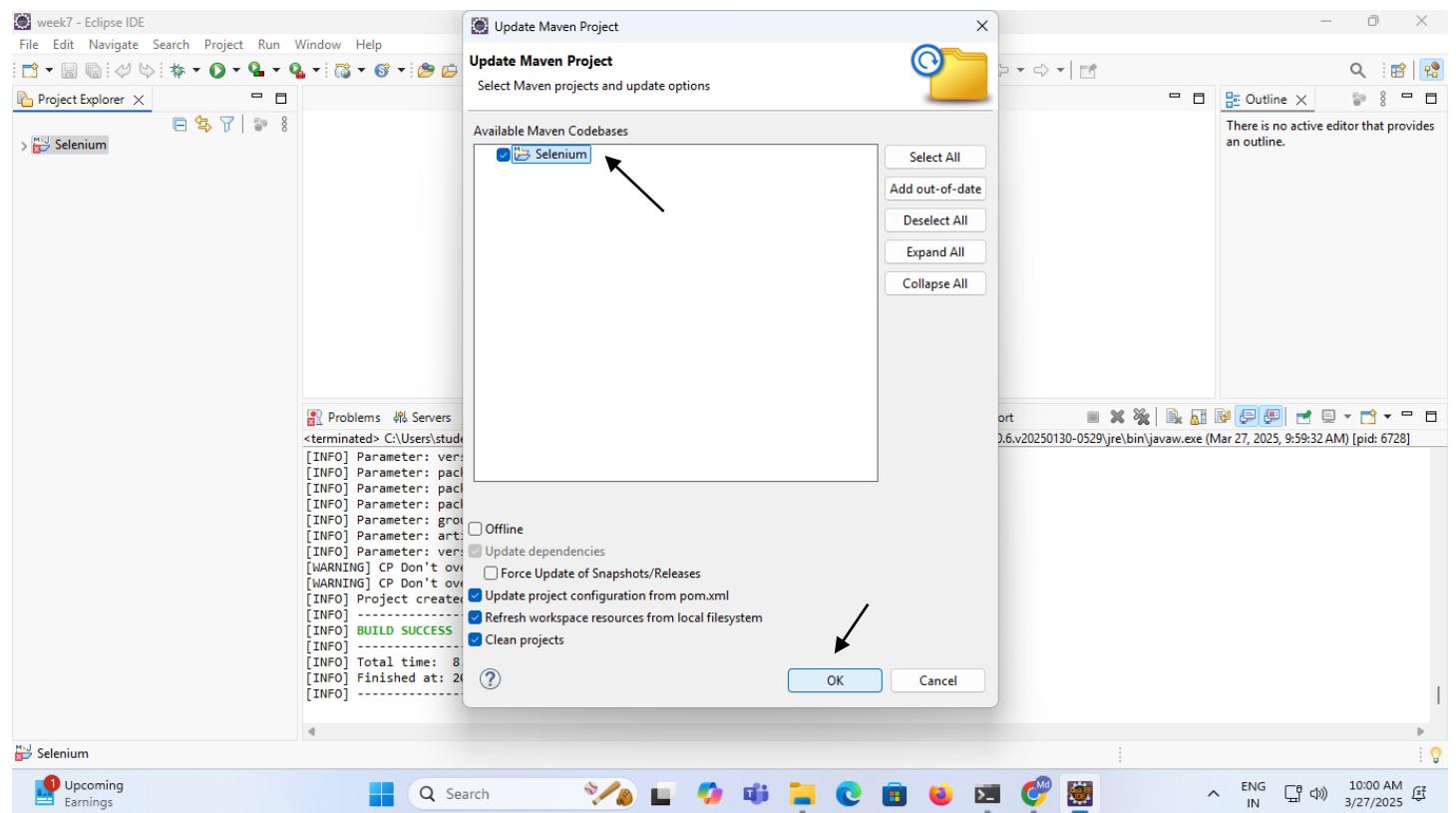
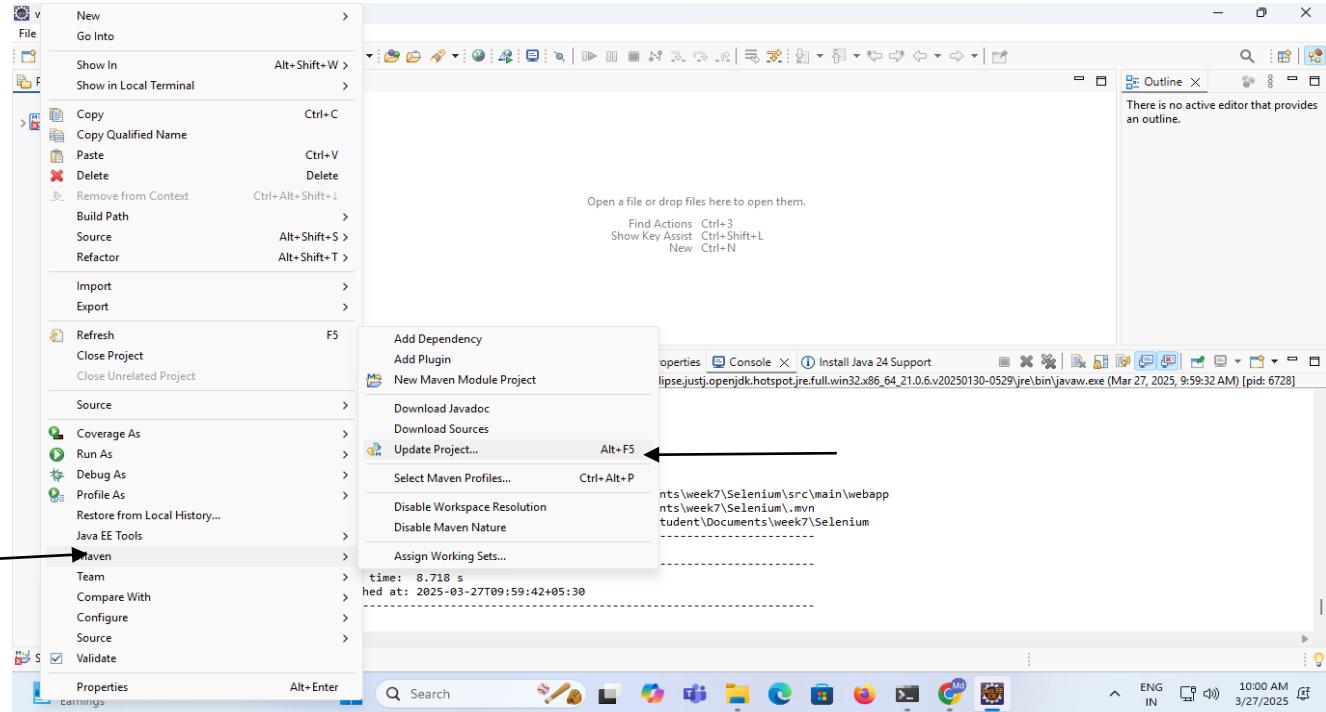
<groupId>org.apache.maven.plugins</groupId>
    <artifactId>maven-install-plugin</artifactId>
    <version>3.1.2</version>
</plugin>
<plugin>

<groupId>org.apache.maven.plugins</groupId>
    <artifactId>maven-deploy-plugin</artifactId>
    <version>3.1.2</version>
</plugin>
</plugins>
</pluginManagement>

</build>
</project>

```

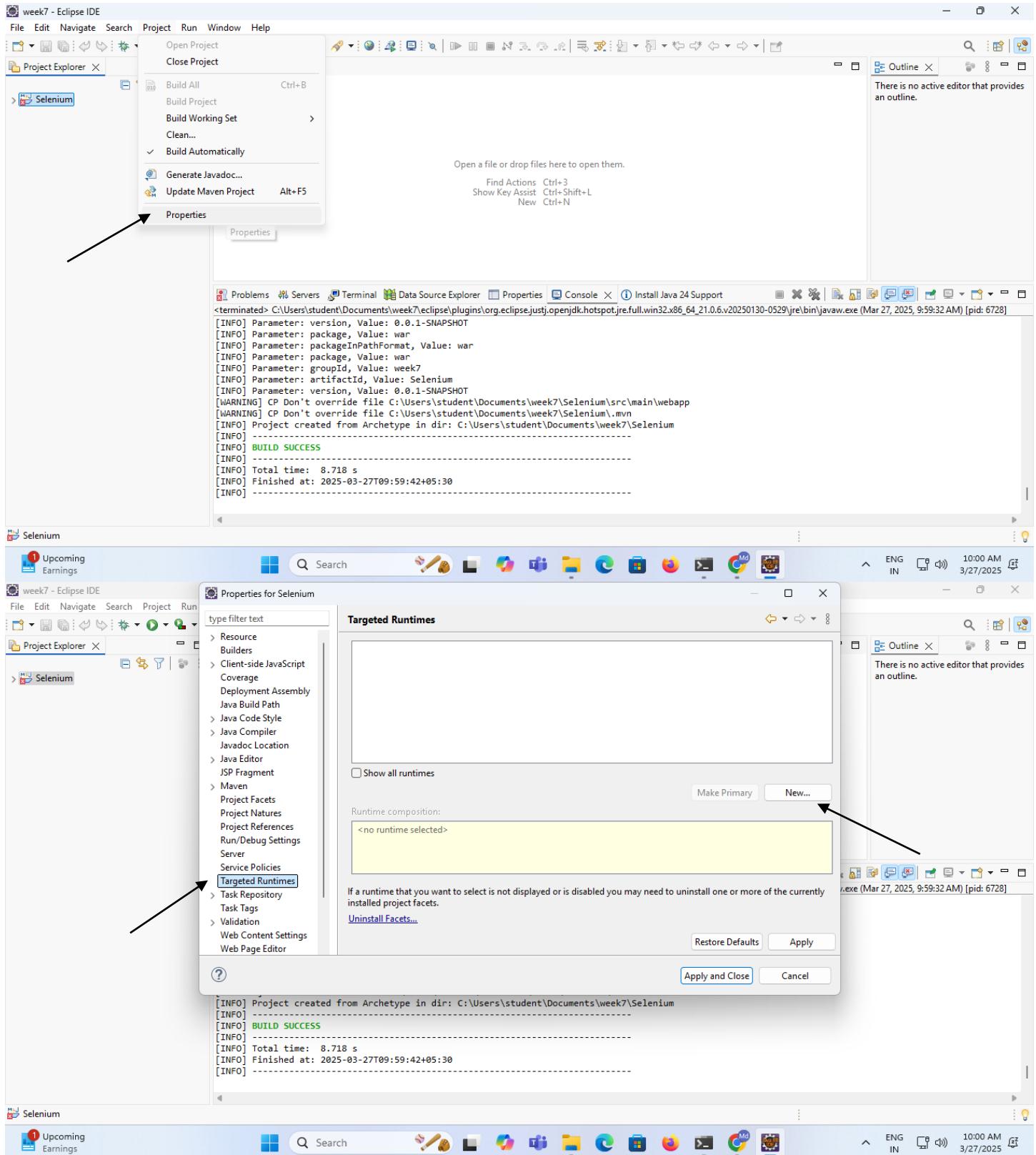


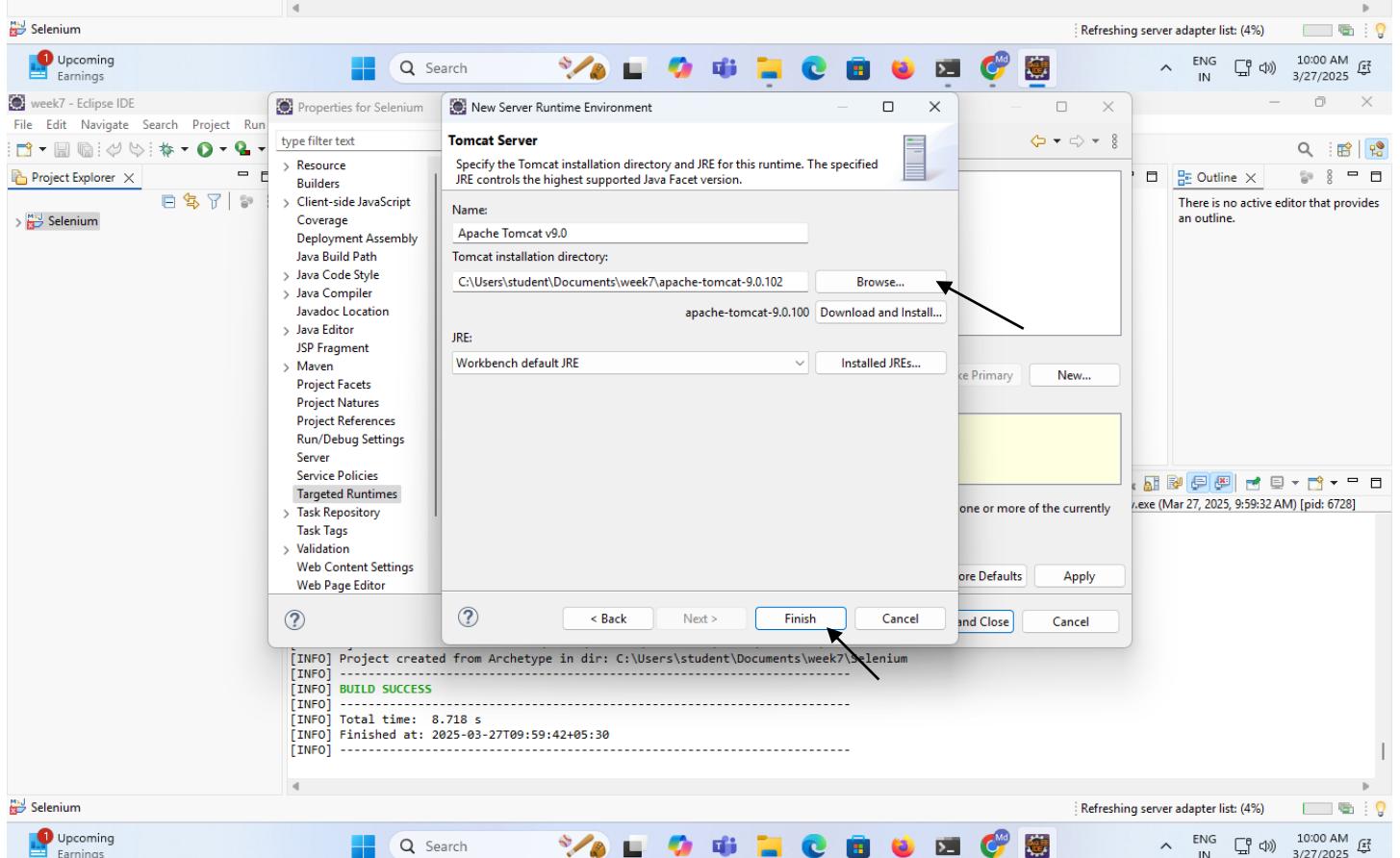
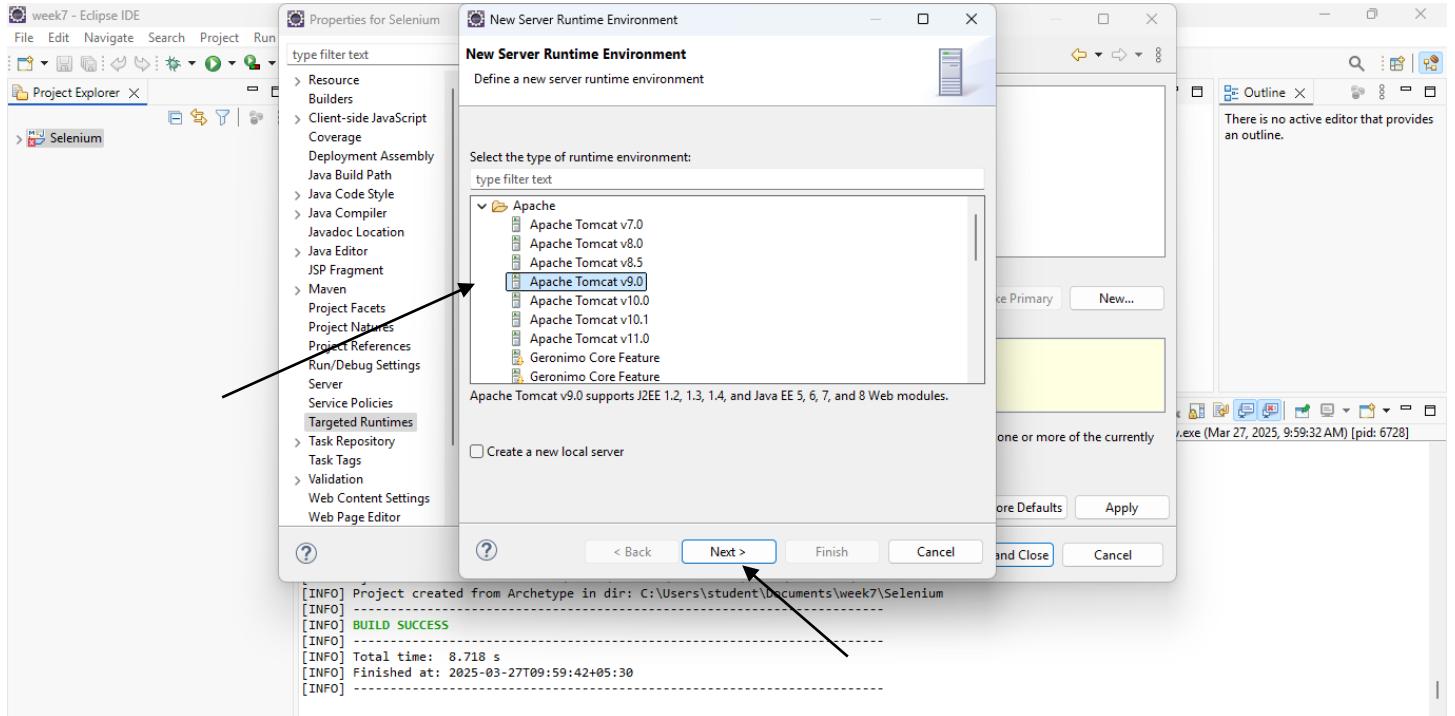


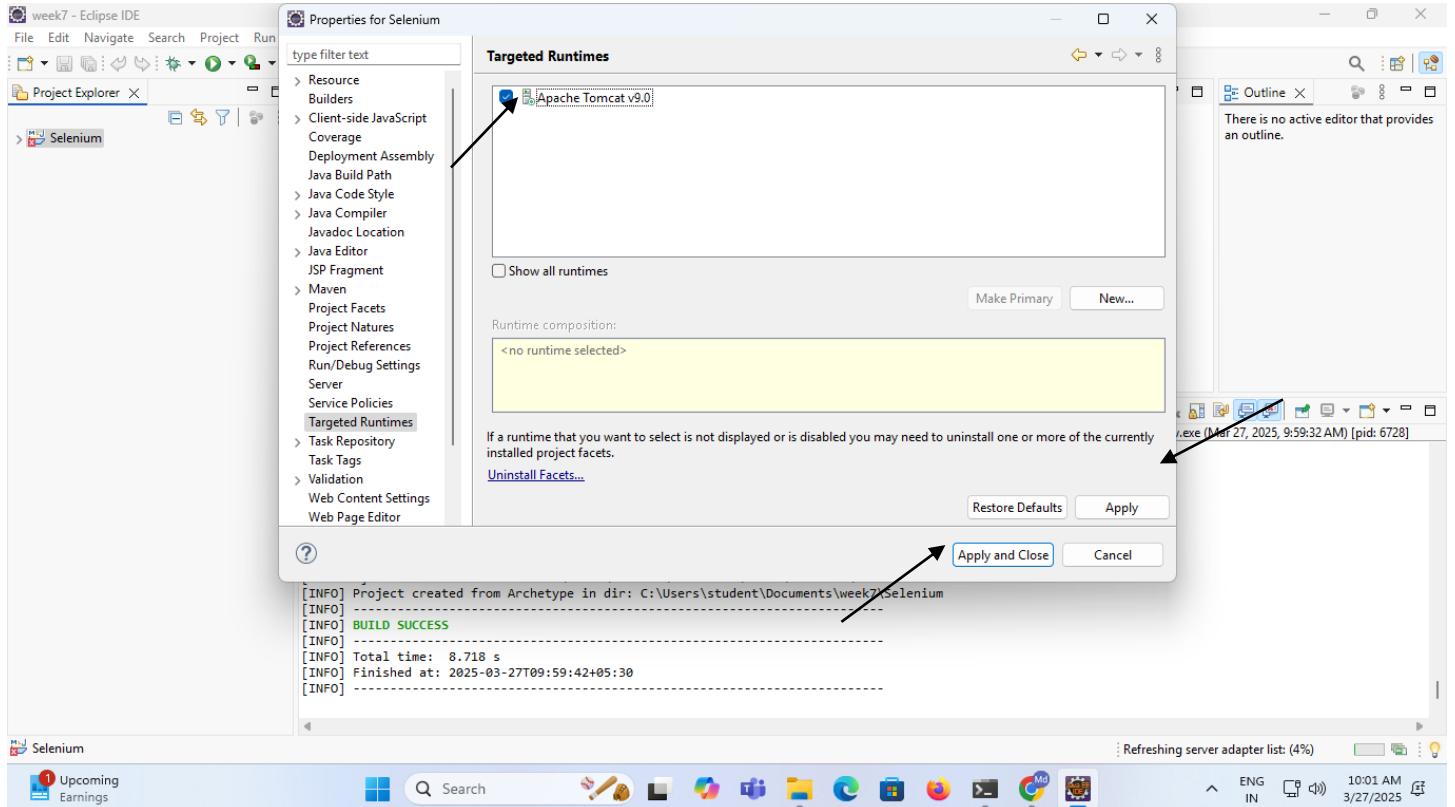
4.Adding Apache tomcat server

Go to Project → Properties → Maven → Targeted Runtimes → new → select apache tomcat 9 → next → browse apache folder address → finish → click check box apache 9 and apply → apply and close.

(Note:-because running src→index.js file running purpose if you not adding it will show errors.)

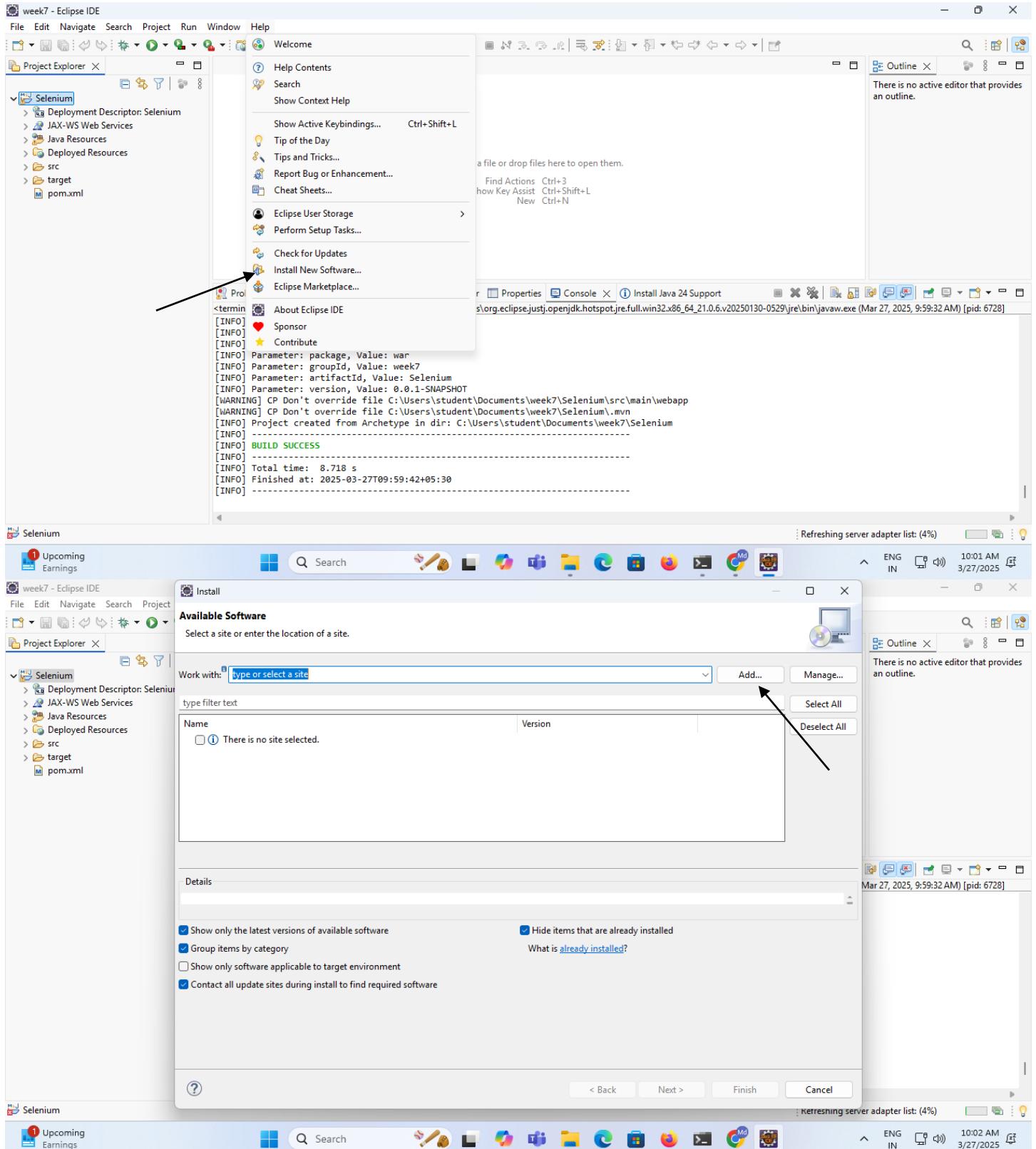


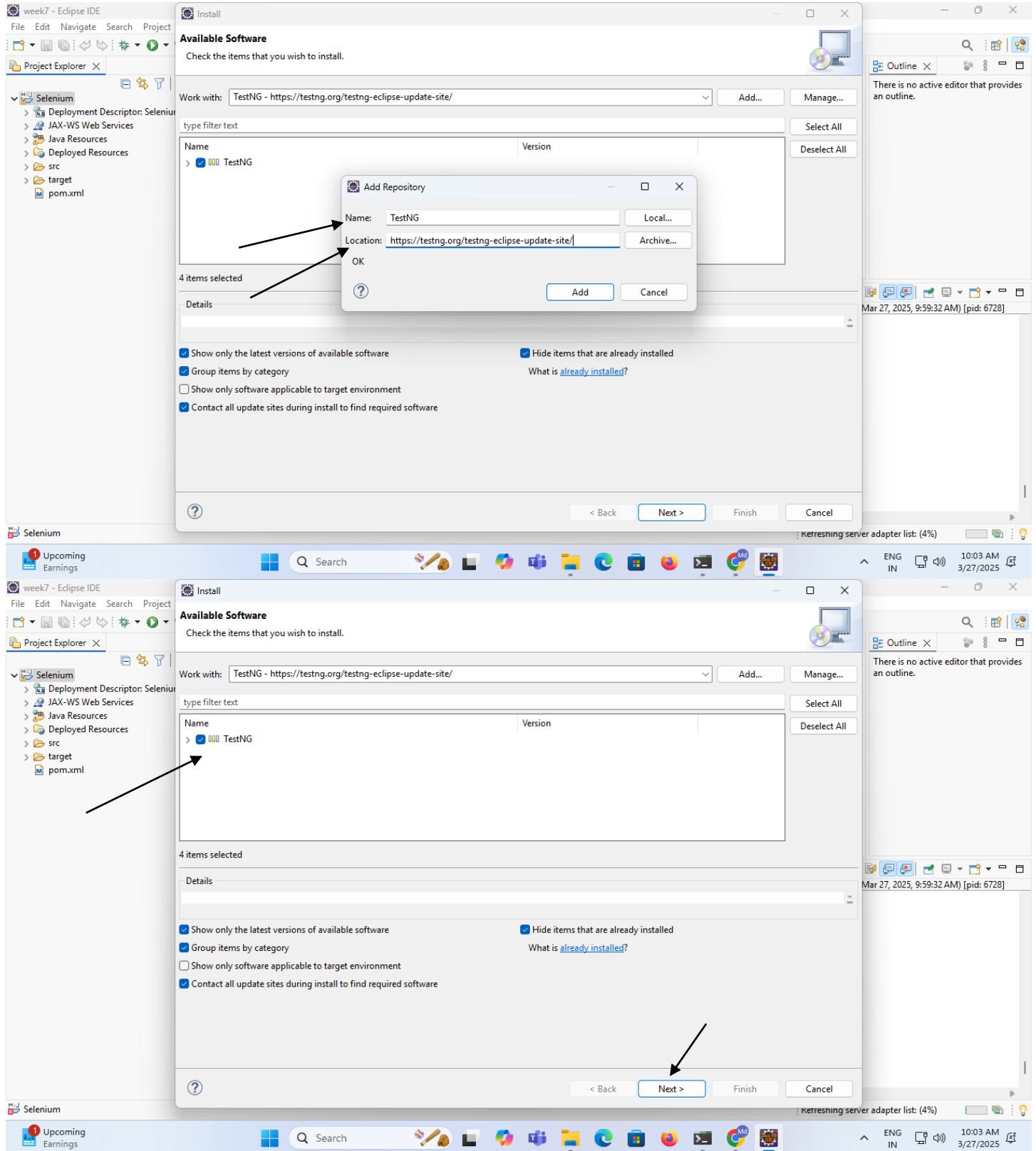


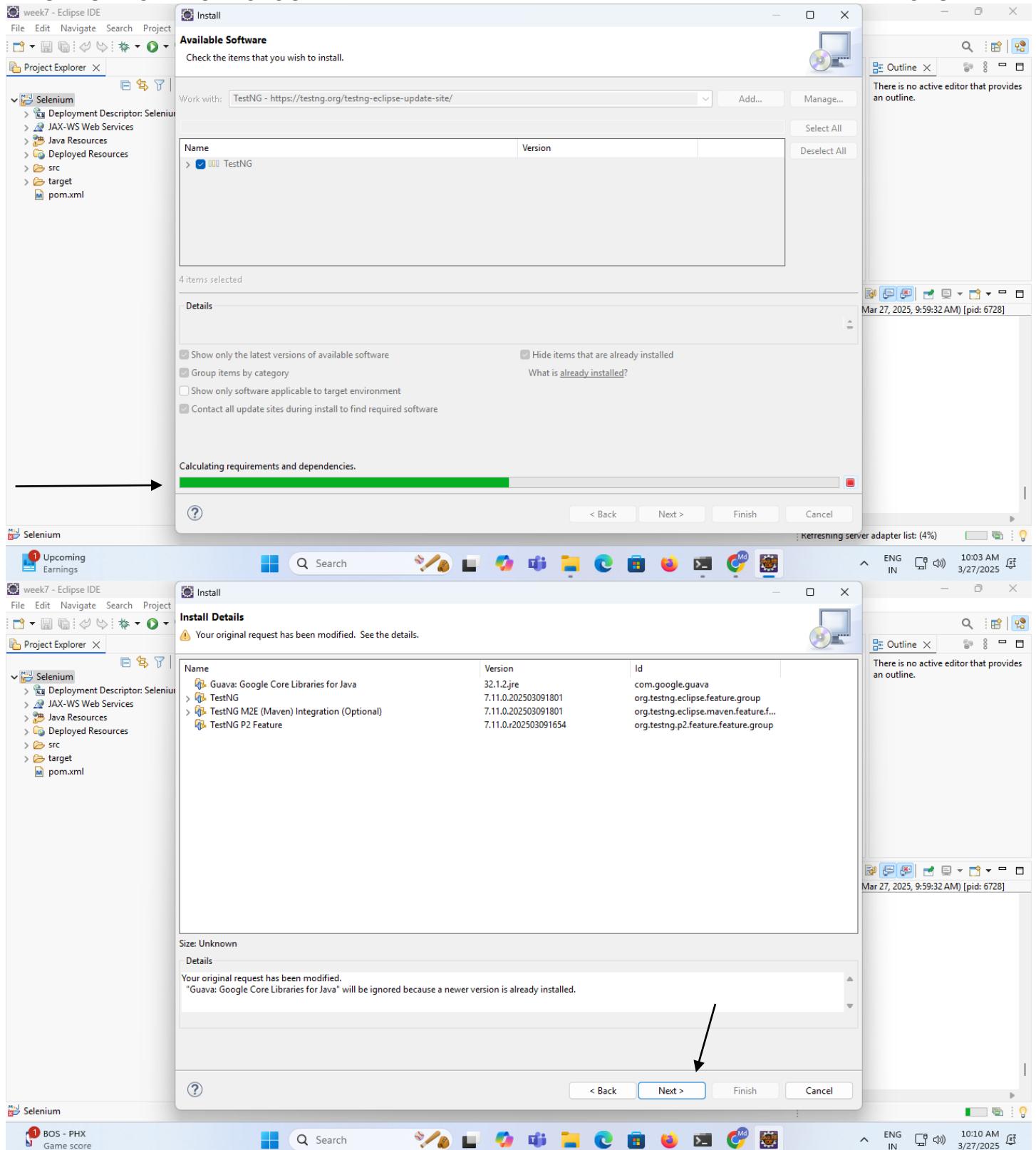


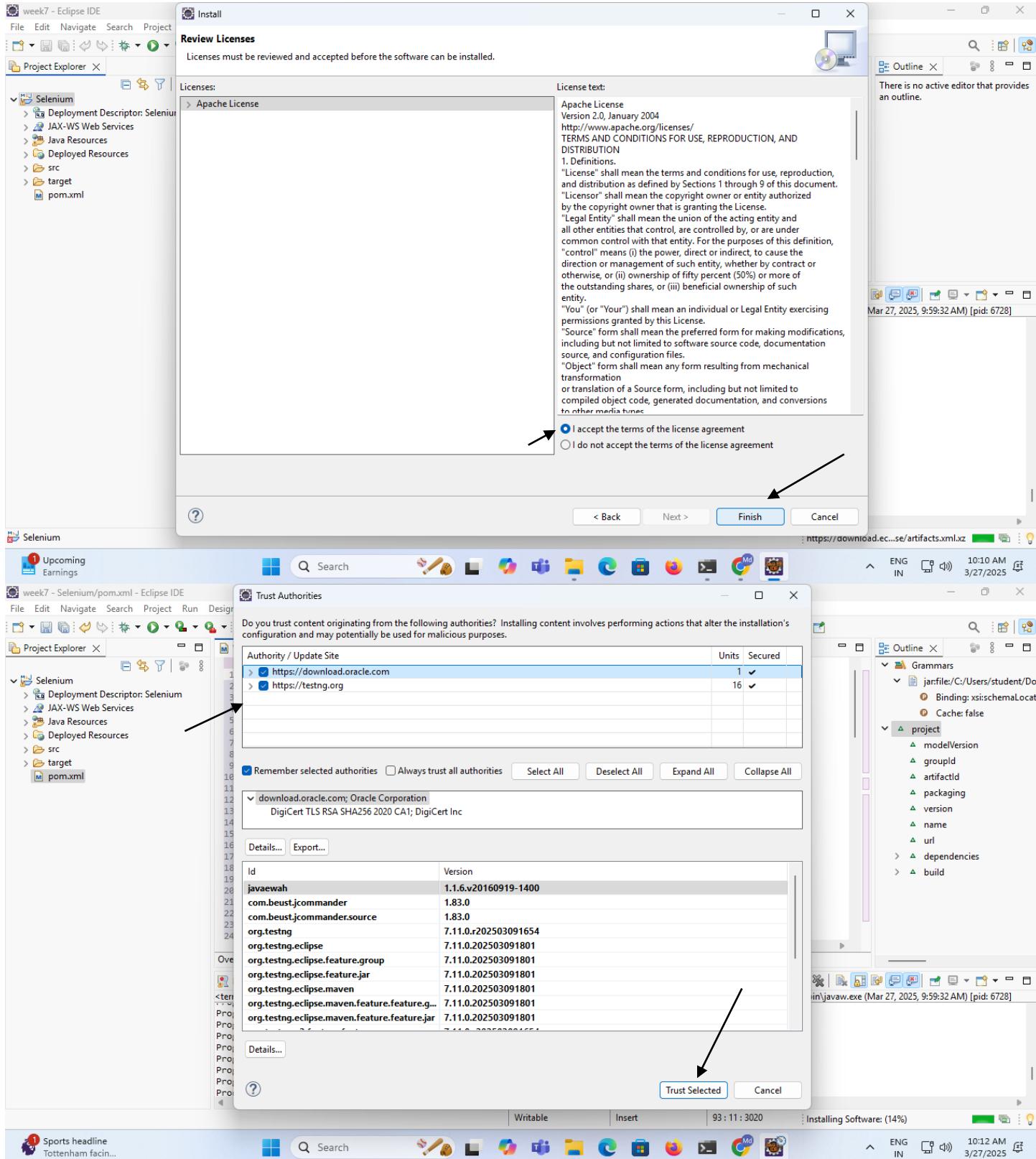
5. Adding TestNG in Eclipse.

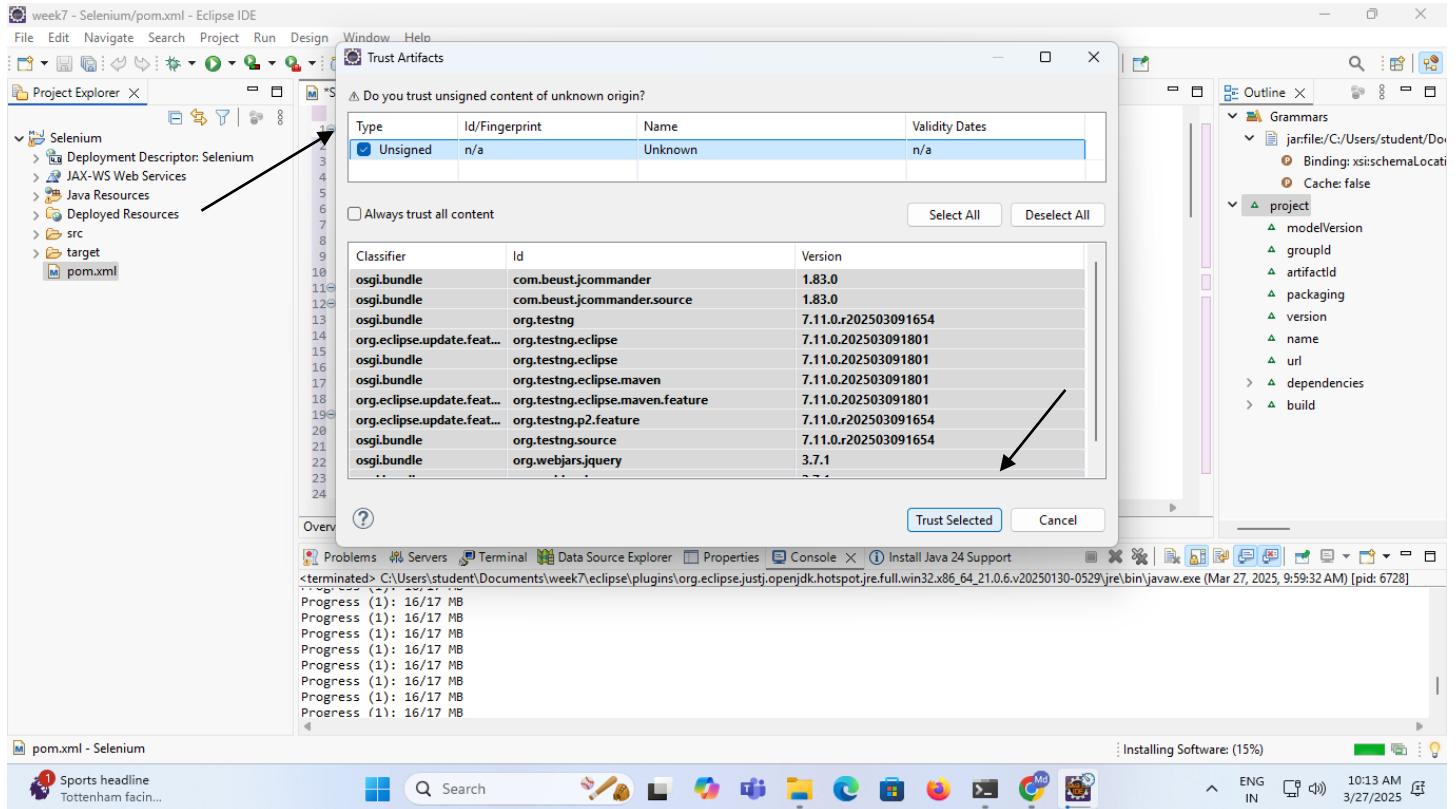
Go to help → Install New Software → Add → Enter Name: TestNG, Location: <https://testing.org/testing-eclipse-update-site/> → Add. Select TestNG check box → Next → Next → I accept → Finish Trust Selected → Trust Selected.











6.Create Folder inside src →test inside java.java folder select build path →current folder.Right click that folder→new→others→class→next→give package name and class name→ok

Java file created copy paste below code.change hub address must and should.

Same page right click→run→TestNG →Finally its run test passes.

SeleniumGridDemo.java

```
package com.testautomation.grid;
import org.openqa.selenium.WebDriver;
import org.openqa.selenium.chrome.ChromeDriver;
import org.openqa.selenium.firefox.FirefoxDriver;
import org.openqa.selenium.remote.DesiredCapabilities;
import org.openqa.selenium.remote.RemoteWebDriver;
import org.testng.annotations.Test;
import java.net.URL;
```

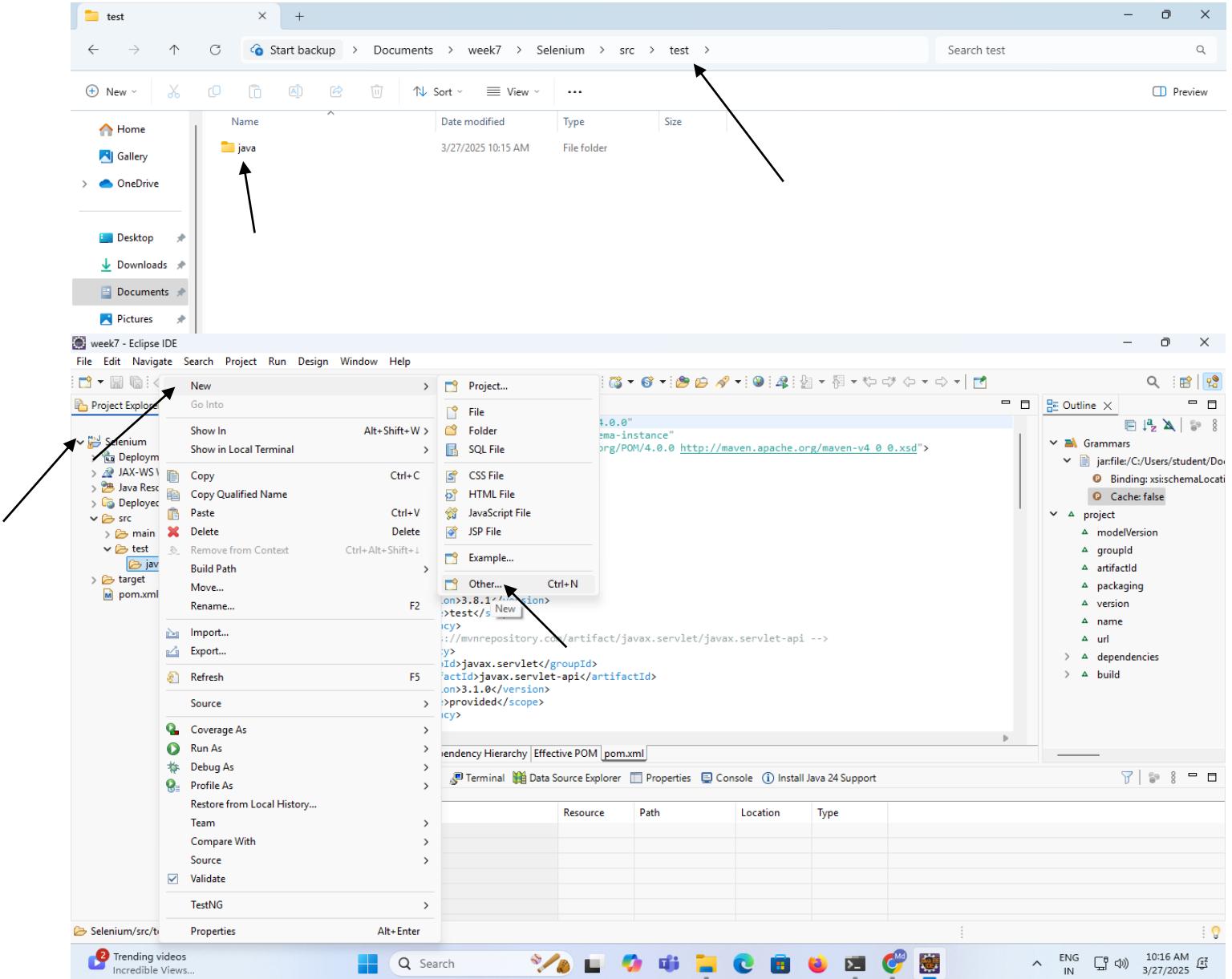
```
public class SeleniumGridDemo {
```

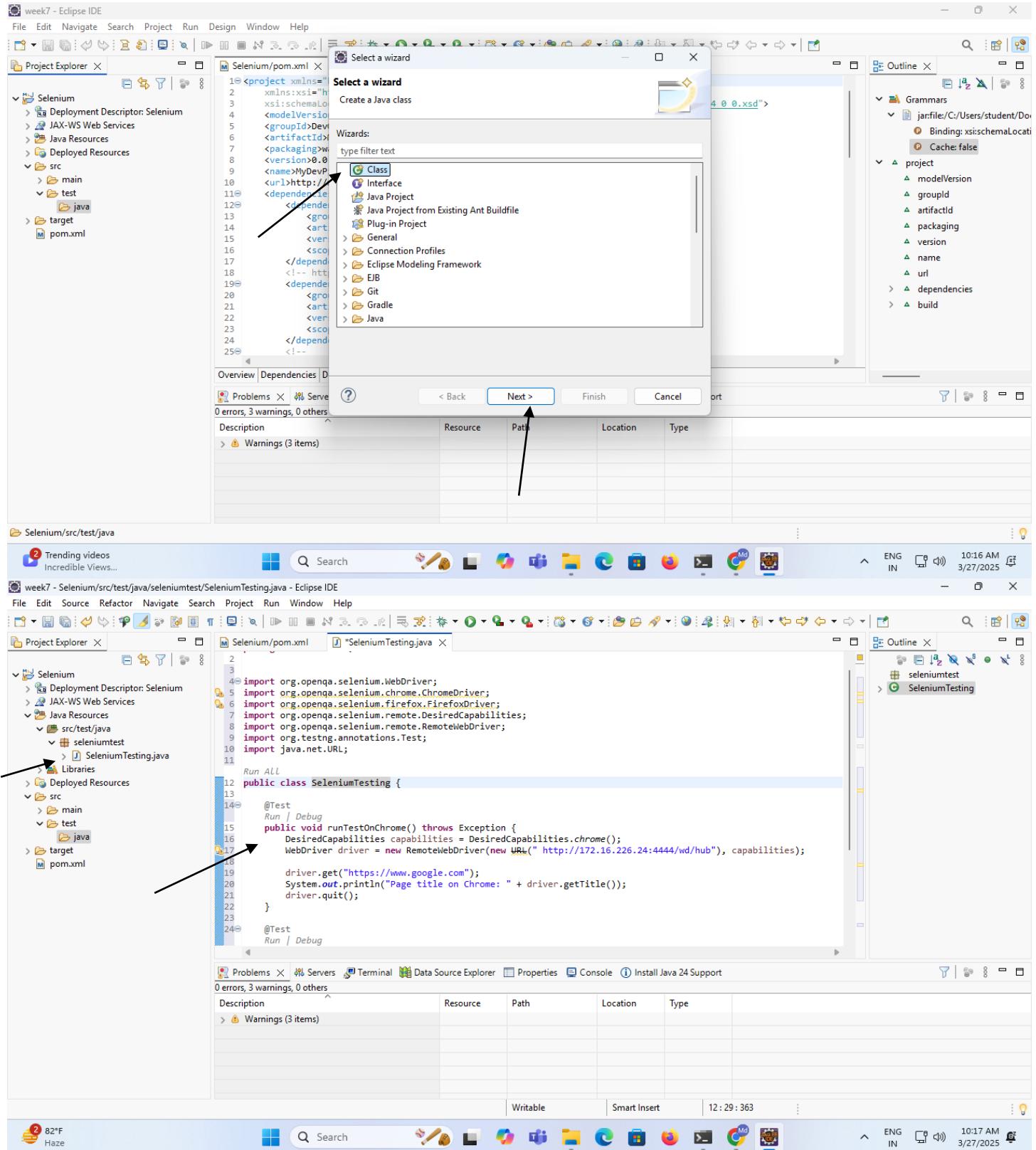
```
@Test
public void runTestOnChrome() throws Exception {
    DesiredCapabilities capabilities = DesiredCapabilities.chrome();
    WebDriver driver = new RemoteWebDriver(new URL("http://172.16.226.24:4444/wd/hub"), capabilities);

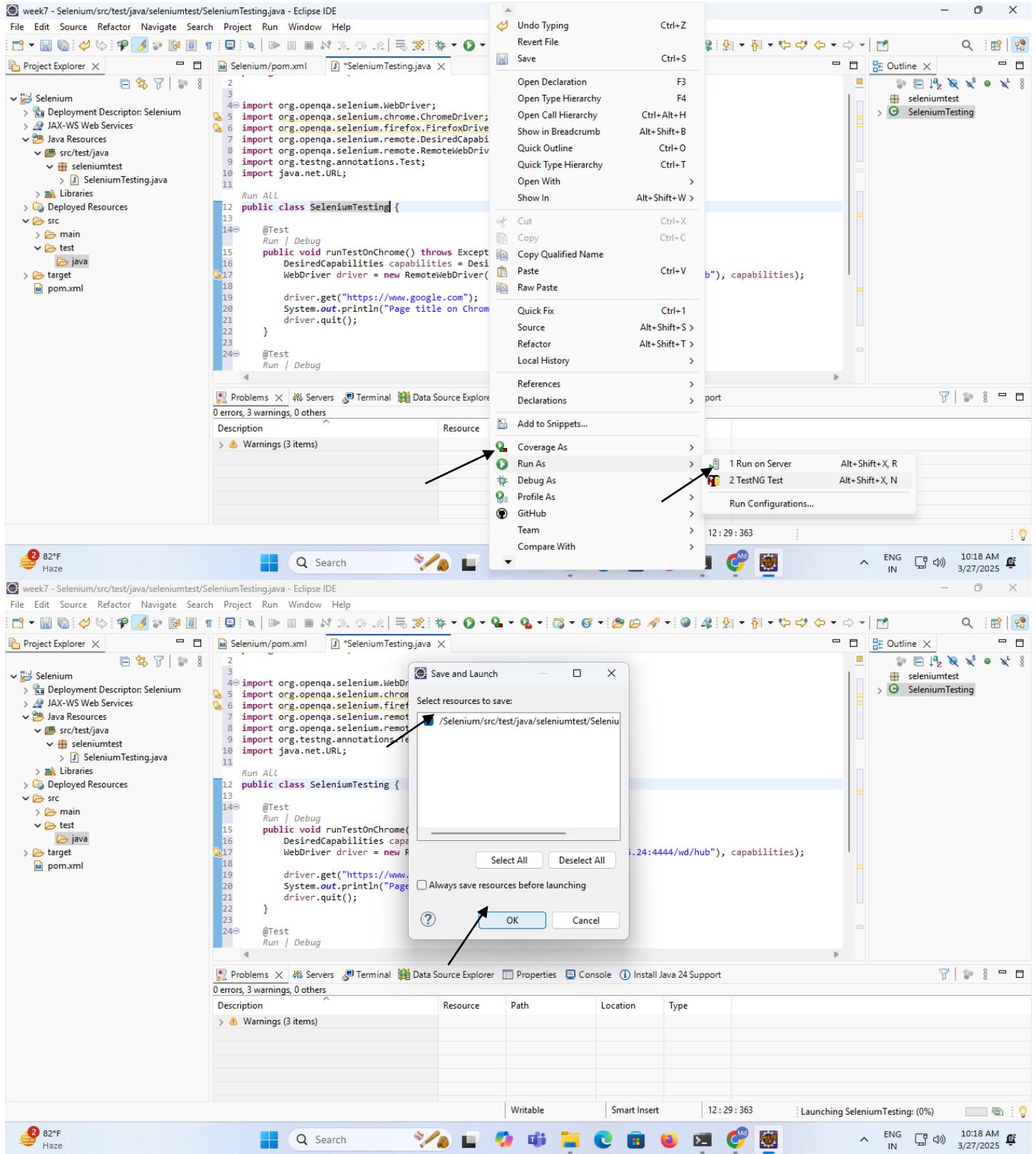
    driver.get("https://www.google.com");
    System.out.println("Page title on Chrome: " + driver.getTitle());
    driver.quit();
}

@Test
public void runTestOnFirefox() throws Exception {
    DesiredCapabilities capabilities = DesiredCapabilities.firefox();
    WebDriver driver = new RemoteWebDriver(new URL("http://172.16.226.24:4444/wd/hub"), capabilities);

    driver.get("https://www.google.com");
    System.out.println("Page title on Firefox: " + driver.getTitle());
    driver.quit();
}
```







Output:-

week7 - Selenium/src/test/java/seleniumtest/SeleniumTesting.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Project Explorer X

SeleniumTesting.java

```

1 package seleniumtest;
2
3
4 import org.openqa.selenium.WebDriver;
5 import org.openqa.selenium.chrome.ChromeDriver;
6 import org.openqa.selenium.firefox.FirefoxDriver;
7 import org.openqa.selenium.remote.DesiredCapabilities;
8 import org.openqa.selenium.remote.RemoteWebDriver;
9 import org.testng.annotations.Test;
10 import java.net.URL;
11
12 public class SeleniumTesting {
13
14     @Test
15     public void runTestOnChrome() throws Exception {
16         DesiredCapabilities capabilities = DesiredCapabilities.chrome();

```

Run All

Console X

```

<terminated> SeleniumTesting [TestNG] C:\Users\student\Documents\week7\eclipse\plugins\org.eclipse.jst.junit.openjdk.hotspot.jre.full.win32.x86_64_21.0.6.v20250130-0529\jre\bin\javaw.exe (Mar 27, 2025, 10:31:01 AM)
PASSED: seleniumtest.SeleniumTesting.runTestOnFirefox

=====
Default test
Tests run: 2, Failures: 0, Skips: 0
=====

=====
Default suite
Total tests run: 2, Passes: 2, Failures: 0, Skips: 0
=====


```

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week7 - Selenium/src/test/java/seleniumtest/SeleniumTesting.java - Eclipse IDE

File Edit Source Refactor Navigate Search Project Run Window Help

Project Explorer X

SeleniumTesting.java

```

1 package seleniumtest;
2
3
4 import org.openqa.selenium.WebDriver;
5 import org.openqa.selenium.chrome.ChromeDriver;
6 import org.openqa.selenium.firefox.FirefoxDriver;
7 import org.openqa.selenium.remote.DesiredCapabilities;
8 import org.testng.annotations.Test;
9 import java.net.URL;
10
11 public class SeleniumTesting {
12
13     @Test
14     public void runTestOnChrome() throws Exception {
15         DesiredCapabilities capabilities = DesiredCapabilities.chrome();
16
17         WebDriver driver = new ChromeDriver(capabilities);
18
19         driver.get("http://www.google.com");
20
21         String title = driver.getTitle();
22
23         System.out.println(title);
24
25         driver.quit();
26
27     }
28
29     @Test
30     public void runTestOnFirefox() throws Exception {
31         DesiredCapabilities capabilities = DesiredCapabilities.firefox();
32
33         WebDriver driver = new FirefoxDriver(capabilities);
34
35         driver.get("http://www.google.com");
36
37         String title = driver.getTitle();
38
39         System.out.println(title);
40
41         driver.quit();
42
43     }
44
45 }

```

Console X

```

<terminated> SeleniumTesting [TestNG] C:\Users\student\Documents\week7\eclipse\plugins\org.eclipse.jst.junit.openjdk.hotspot.jre.full.win32.x86_64_21.0.6.v20250130-0529\jre\bin\javaw.exe (Mar 27, 2025, 10:31:01 AM)
[RemoteTestNG] detected TestNG version 7.11.0
SLF4J: No SLF4J providers were found.
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See https://www.slf4j.org/codes.html#noProviders for further details.
Mar 27, 2025 10:30:52 AM org.openqa.selenium.remote.DesiredCapabilities chrome
INFO: Using `new ChromeOptions()` is preferred to `DesiredCapabilities.chrome()`
Mar 27, 2025 10:30:56 AM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Page title on Chrome: Google
Mar 27, 2025 10:30:56 AM org.openqa.selenium.remote.DesiredCapabilities firefox
INFO: Using `new FirefoxOptions()` is preferred to `DesiredCapabilities.firefox()`
Mar 27, 2025 10:31:00 AM org.openqa.selenium.remote.ProtocolHandshake createSession
INFO: Detected dialect: W3C
Page title on Firefox: Google
PASSED: seleniumtest.SeleniumTesting.runTestOnChrome
PASSED: seleniumtest.SeleniumTesting.runTestOnFirefox

=====
Default test
Tests run: 2, Failures: 0, Skips: 0
=====

=====
Default suite
Total tests run: 2, Passes: 2, Failures: 0, Skips: 0
=====


```

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