SELENIUM INSTALLATION AND SETUP HANDBOOK

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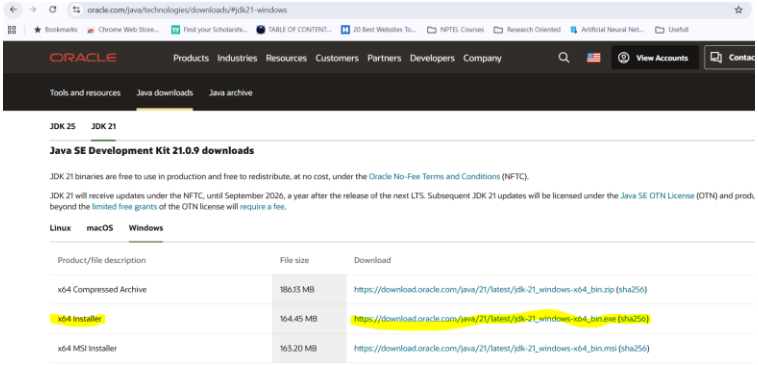
https://github.com/sarupapu7/Selenium-HandBook

Selenium Installation and Setup Handbook

Step 1: Install Java JDK and set environment variables

- Go to Oracle official site: https://www.oracle.com/java/technologies/downloads/
- Choose JDK 21 and download the installer for your OS

Ex: for Windows, refer below screenshot



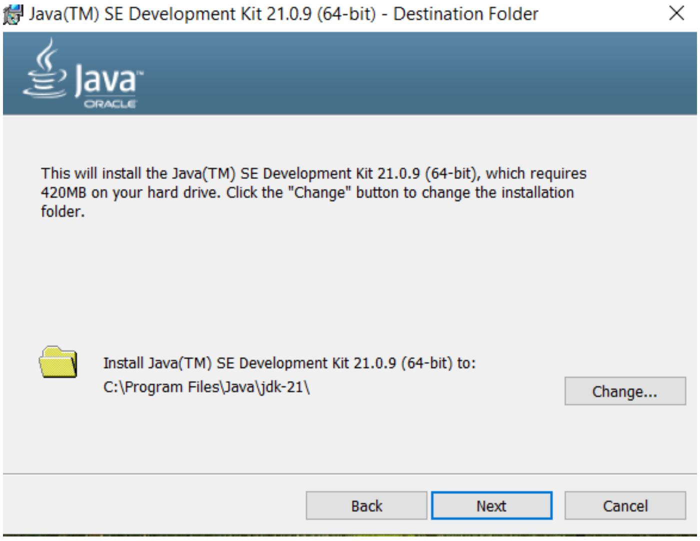
Java SE Development Kit 21.0.9 downloads

JDK 21 binaries are free to use in production and free to redistribute, at no cost, under the Oracle No-Fee Terms and Conditions (NFTC).

JDK 21 will receive updates under the NFTC, until September 2026, a year after the release of the next LTS. Subsequent JDK 21 updates will be licensed under the Java SE OTN License (OTN) and produ beyond the limited free grants of the OTN license will require a fee.

Product/file description	File size	Download
x64 Compressed Archive	186.13 MB	https://download.oracle.com/java/21/latest/jdk-21_windows-x64_bin.zip (sha256)
x64 Installer	164.45 MB	https://download.oracle.com/java/21/latest/jdk-21_windows-x64_bin.exe (sha256)
x64 MSI Installer	163.20 MB	https://download.oracle.com/java/21/latest/jdk-21_windows-x64_bin.msi (sha256)

- Run the installer and follow prompts.



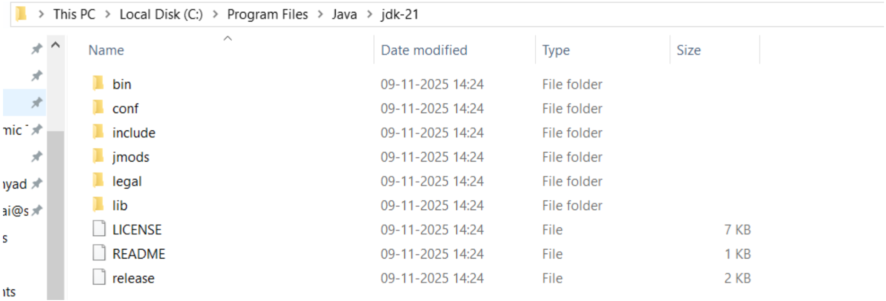
Java(TM) SE Development Kit 21.0.9 (64-bit) - Destination Folder

This will install the Java(TM) SE Development Kit 21.0.9 (64-bit), which requires 420MB on your hard drive. Click the "Change" button to change the installation folder.

Install Java(TM) SE Development Kit 21.0.9 (64-bit) to:
C:\Program Files\Java\jdk-21\

Note: If the installer asks to set JAVA_HOME/add to PATH, choose yes if available. If not, finish install and set manually (steps below).

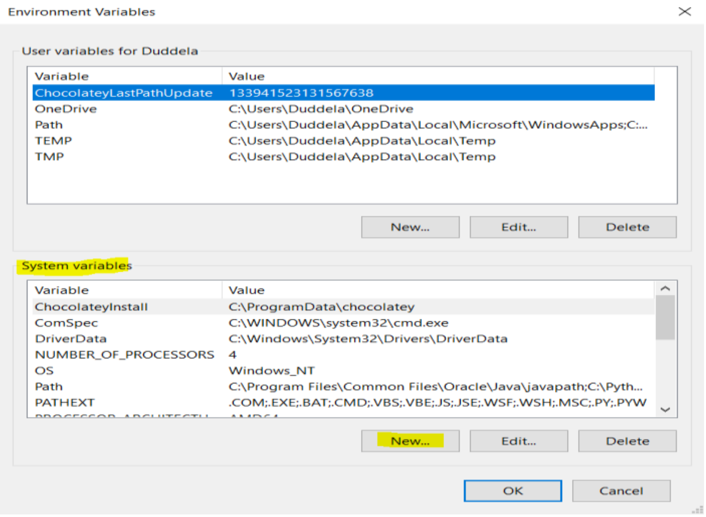
- Use the full path to the JDK installation directory (the folder that contains bin, lib).



This PC > Local Disk (C:) > Program Files > Java > jdk-21

Name	Date modified	Type	Size
bin	09-11-2025 14:24	File folder	
conf	09-11-2025 14:24	File folder	
include	09-11-2025 14:24	File folder	
jmods	09-11-2025 14:24	File folder	
legal	09-11-2025 14:24	File folder	
lib	09-11-2025 14:24	File folder	
LICENSE	09-11-2025 14:24	File	7 KB
README	09-11-2025 14:24	File	1 KB
release	09-11-2025 14:24	File	2 KB

- Right-click **This PC** → **Properties** → **Advanced system settings** → **Environment Variables**.
- Under *System variables*:
  - Click **New** → Name: JAVA_HOME → Value: C:\Program Files\Java\jdk-21 (your actual path).
  - Find Path → Edit → New → %JAVA_HOME%\bin



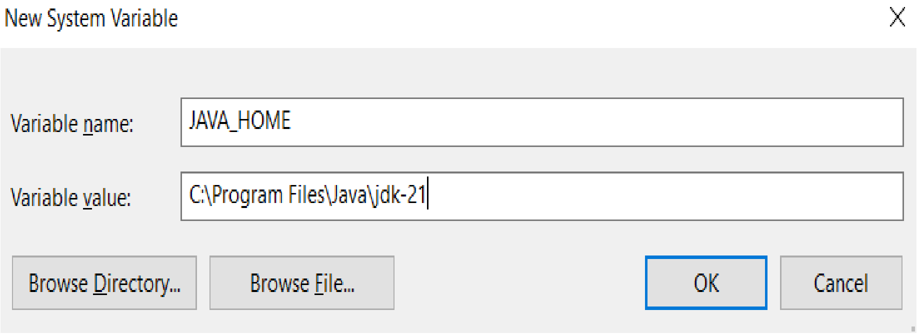
Environment Variables

User variables for Duddela

Variable	Value
ChocolateyLastPathUpdate	133941523131567638
OneDrive	C:\Users\Duddela\OneDrive
Path	C:\Users\Duddela\AppData\Local\Microsoft\WindowsApps;C:...
TEMP	C:\Users\Duddela\AppData\Local\Temp
TMP	C:\Users\Duddela\AppData\Local\Temp

System variables

Variable	Value
ChocolateyInstall	C:\ProgramData\chocolatey
ComSpec	C:\WINDOWS\system32\cmd.exe
DriverData	C:\Windows\System32\Drivers\DriverData
NUMBER_OF_PROCESSORS	4
OS	Windows_NT
Path	C:\Program Files\Common Files\Oracle\Java\javapath;C:\Pyth...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC;.PY;.PYW



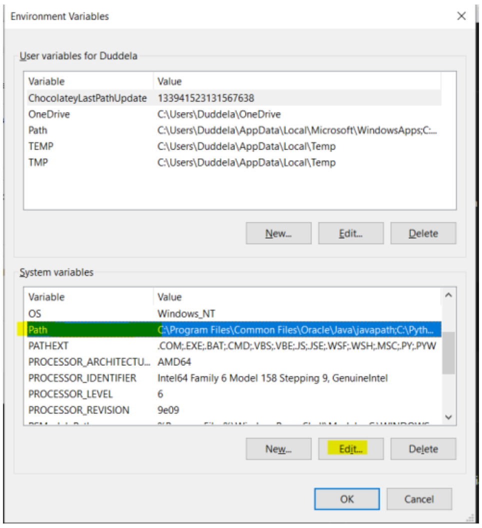
New System Variable

Variable name: JAVA_HOME

Variable value: C:\Program Files\Java\jdk-21

- Click Ok. It will be added.

- In the same **Environment Variables** window, scroll down in the **System variables** section, select the variable **Path** and Click **Edit**



User variables for Duddela

Variable	Value
ChocolateyLastPathUpdate	133941523131567638
OneDrive	C:\Users\Duddela\OneDrive
Path	C:\Users\Duddela\AppData\Local\Microsoft\WindowsApps;C:...
TEMP	C:\Users\Duddela\AppData\Local\Temp
TMP	C:\Users\Duddela\AppData\Local\Temp

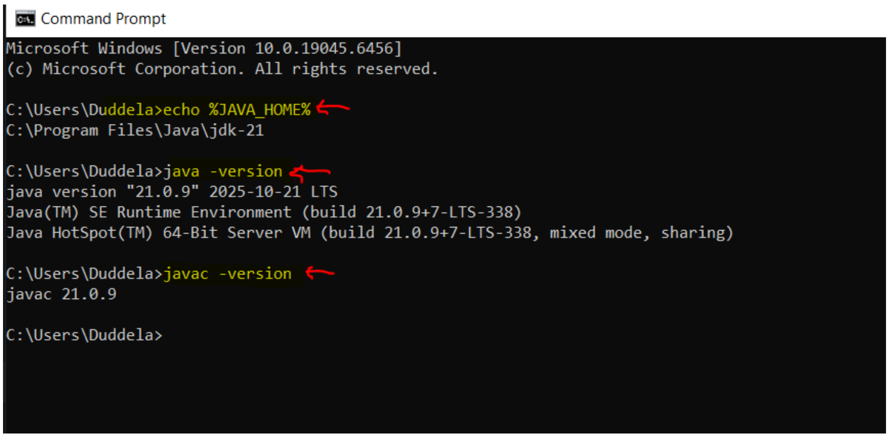
System variables

Variable	Value
OS	Windows_NT
Path	C:\Program Files\Common Files\Oracle\Java\javapath;C:\Pyth...
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;.JSE;.WSF;.WSH;.MSC;.PY;.PYW
PROCESSOR_ARCHITECTU...	AMD64
PROCESSOR_IDENTIFIER	Intel64 Family 6 Model 158 Stepping 9, GenuineIntel
PROCESSOR_LEVEL	6
PROCESSOR_REVISION	9e09

- ➢ Then, click **New** and add this line: %JAVA_HOME%\bin
- ➢ Click **OK** → **OK** → **OK** on all windows to close.

✅ This tells Windows to look inside your JDK's bin folder for Java commands.

- ➢ Now, verify your configuration by opening a **new Command Prompt** (important! old ones won't pick up new variables) and run below commands one by one.

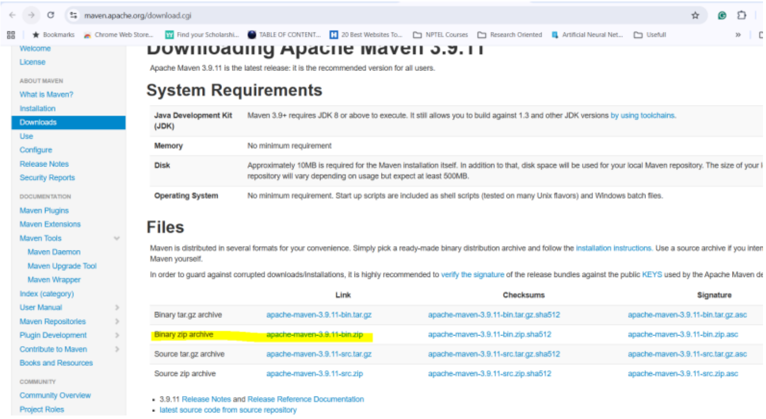


```
Microsoft Windows [Version 10.0.19045.6456]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Duddela>echo %JAVA_HOME%
C:\Program Files\Java\jdk-21

C:\Users\Duddela>java -version
java version "21.0.9" 2025-10-21 LTS
Java(TM) SE Runtime Environment (build 21.0.9+7-LTS-338)
Java HotSpot(TM) 64-Bit Server VM (build 21.0.9+7-LTS-338, mixed mode, sharing)

C:\Users\Duddela>javac -version
javac 21.0.9

C:\Users\Duddela>
```

Java is fully configured 😊

Step 2: Install and configure Maven

- ➢ Download Maven ZIP: 👉 https://maven.apache.org/download.cgi



Downloading Apache Maven 3.9.11

Apache Maven 3.9.11 is the latest release: it is the recommended version for all users.

System Requirements

Java Development Kit (JDK)	Maven 3.9+ requires JDK 8 or above to execute. It still allows you to build against 1.3 and other JDK versions by using toolchains.
Memory	No minimum requirement
Disk	Approximately 10MB is required for the Maven installation itself. In addition to that, disk space will be used for your local Maven repository. The size of your l repository will vary depending on usage but expect at least 500MB.
Operating System	No minimum requirement. Start up scripts are included as shell scripts (tested on many Unix flavors) and Windows batch files.

Files

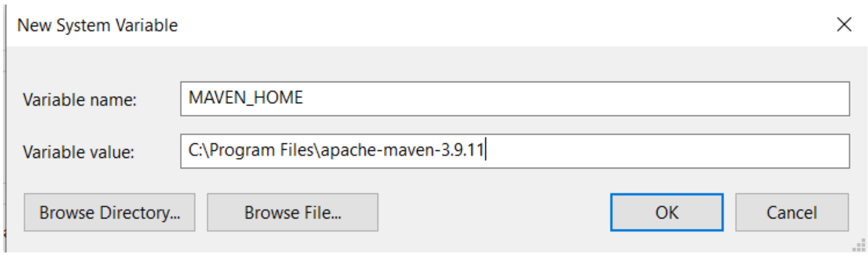
Maven is distributed in several formats for your convenience. Simply pick a ready-made binary distribution archive and follow the installation instructions. Use a source archive if you inten Maven yourself.

In order to guard against corrupted downloads/installations, it is highly recommended to verify the signature of the release bundles against the public KEYS used by the Apache Maven de

	Link	Checksums	Signature
Binary tar.gz archive	apache-maven-3.9.11-bin.tar.gz	apache-maven-3.9.11-bin.tar.gz.sha512	apache-maven-3.9.11-bin.tar.gz.asc
Binary zip archive	apache-maven-3.9.11-bin.zip	apache-maven-3.9.11-bin.zip.sha512	apache-maven-3.9.11-bin.zip.asc
Source tar.gz archive	apache-maven-3.9.11-src.tar.gz	apache-maven-3.9.11-src.tar.gz.sha512	apache-maven-3.9.11-src.tar.gz.asc
Source zip archive	apache-maven-3.9.11-src.zip	apache-maven-3.9.11-src.zip.sha512	apache-maven-3.9.11-src.zip.asc

- 3.9.11 Release Notes and Release Reference Documentation
- latest source code from source repository

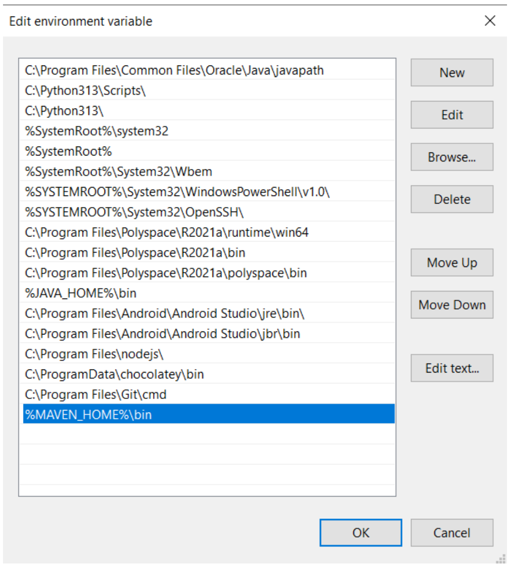
- Extract it to a location, e.g.: C:\Program Files\Apache\maven
- Set Environment variables. In **System Variables**, add a new variable:
  - **Variable name:** MAVEN_HOME
  - **Variable value:** C:\Program Files\Apache\maven



Variable name: MAVEN_HOME

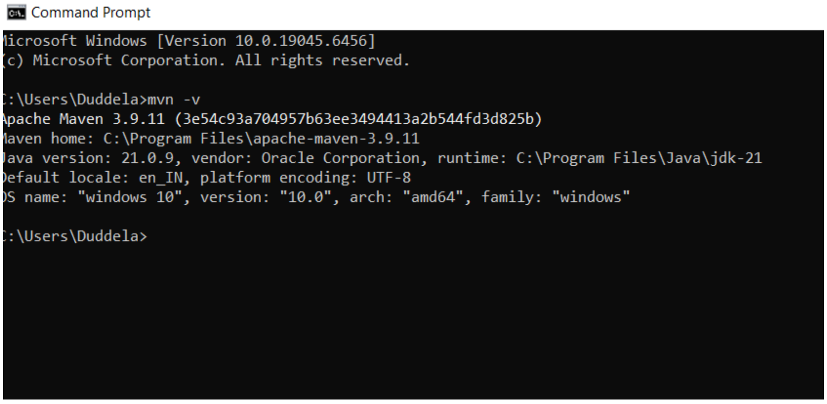
Variable value: C:\Program Files\apache-maven-3.9.11

- Add this to the **Path** variable: %MAVEN_HOME%\bin



```
C:\Program Files\Common Files\Oracle\Java\javapath
C:\Python313\Scripts\
C:\Python313\
%SystemRoot%\system32
%SystemRoot%
%SystemRoot%\System32\Wbem
%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\
%SYSTEMROOT%\System32\OpenSSH\
C:\Program Files\Polyspace\R2021a\runtime\win64
C:\Program Files\Polyspace\R2021a\bin
C:\Program Files\Polyspace\R2021a\polyspace\bin
%JAVA_HOME%\bin
C:\Program Files\Android\Android Studio\jre\bin\
C:\Program Files\Android\Android Studio\jbr\bin
C:\Program Files\nodejs\
C:\ProgramData\chocolatey\bin
C:\Program Files\Git\cmd
%MAVEN_HOME%\bin
```

- **Click OK → OK → OK**
- Open a **new Command Prompt** and verify: “mvn -v”



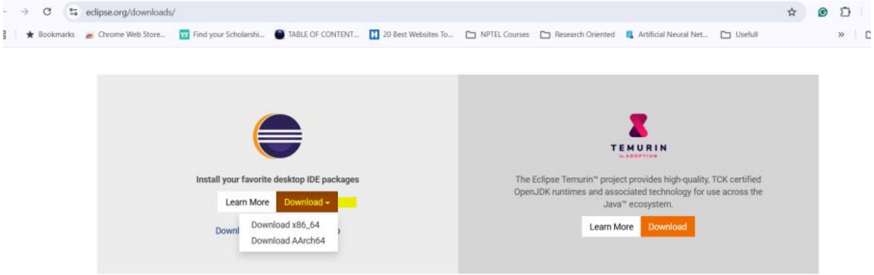
Command Prompt

```
icrosoft Windows [Version 10.0.19045.6456]
(c) Microsoft Corporation. All rights reserved.

:\Users\Duddela>mvn -v
pache Maven 3.9.11 (3e54c93a704957b63ee3494413a2b544fd3d825b)
laven home: C:\Program Files\apache-maven-3.9.11
ava version: 21.0.9, vendor: Oracle Corporation, runtime: C:\Program Files\Java\jdk-21
efault locale: en_IN, platform encoding: UTF-8
S name: "windows 10", version: "10.0", arch: "amd64", family: "windows"

:\Users\Duddela>
```

If you see maven version and java version, maven is installed successfully!

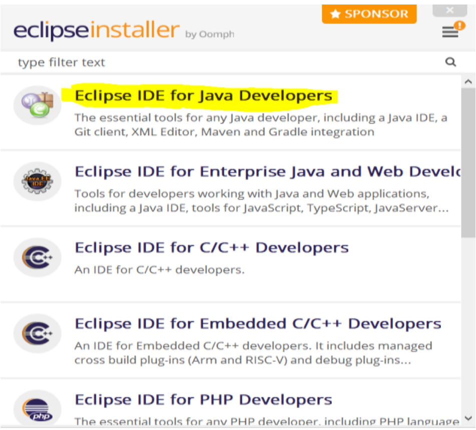
Step 3: Install Eclipse IDE for Java and point to JDK

- ➢ Go to 👉 https://www.eclipse.org/downloads/ and download



eclipse.org/downloads/
Install your favorite desktop IDE packages
Learn More
Download
Download x86_64
Download AArch64
TEMURIN
The Eclipse Temurin™ project provides high-quality, TCK certified OpenJDK runtimes and associated technology for use across the Java™ ecosystem.
Learn More
Download

- ➢ Install and open it – Then, Choose Eclipse IDE for Java Developers



Eclipse IDE for Java Developers
The essential tools for any Java developer, including a Java IDE, a Git client, XML Editor, Maven and Gradle integration

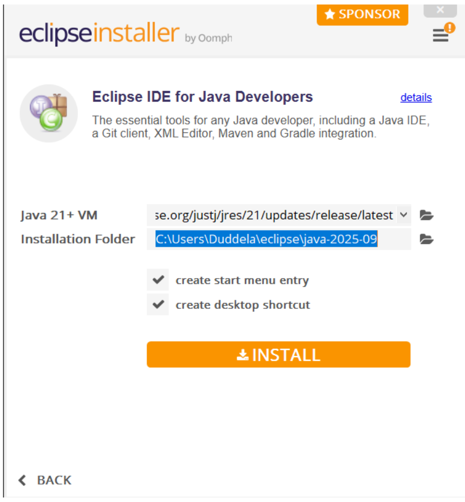
Eclipse IDE for Enterprise Java and Web Develc
Tools for developers working with Java and Web applications, including a Java IDE, tools for JavaScript, TypeScript, JavaServer...

Eclipse IDE for C/C++ Developers
An IDE for C/C++ developers.

Eclipse IDE for Embedded C/C++ Developers
An IDE for Embedded C/C++ developers. It includes managed cross build plug-ins (Arm and RISC-V) and debug plug-ins...

Eclipse IDE for PHP Developers
The essential tools for any PHP developer, including PHP language

- ➢ Select the default location, click install and then launch.



Eclipse IDE for Java Developers

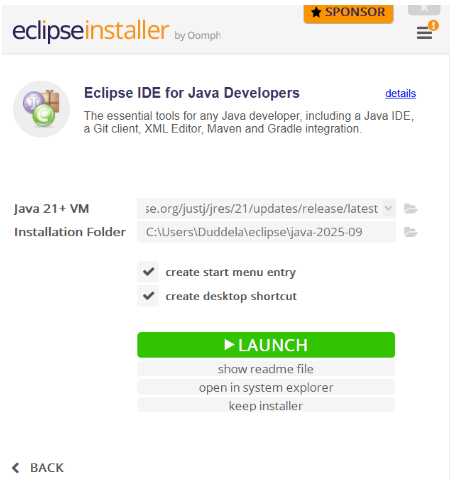
The essential tools for any Java developer, including a Java IDE, a Git client, XML Editor, Maven and Gradle integration.

Java 21+ VM se.org/justj/jres/21/updates/release/latest

Installation Folder C:\Users\Duddela\eclipse\java-2025-09

✓ create start menu entry

✓ create desktop shortcut



Eclipse IDE for Java Developers

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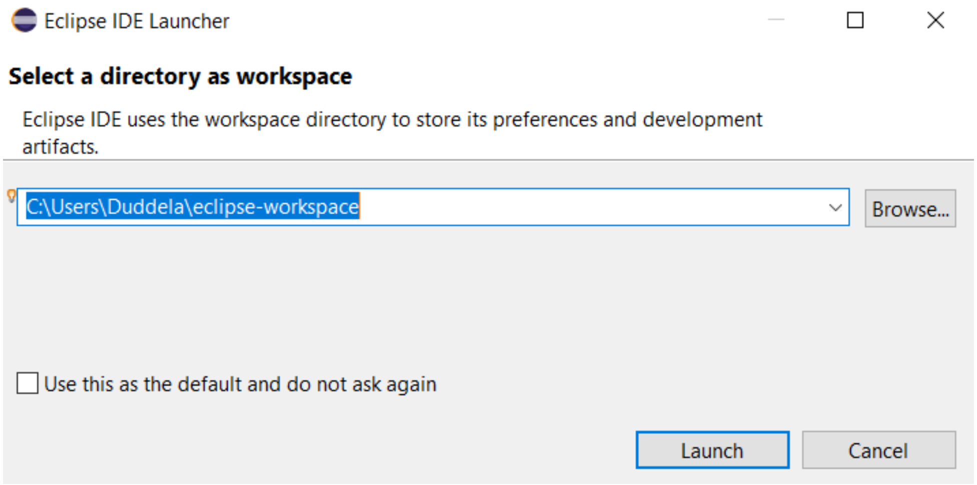
Java 21+ VM se.org/justj/jres/21/updates/release/latest

Installation Folder C:\Users\Duddela\eclipse\java-2025-09

✓ create start menu entry

✓ create desktop shortcut

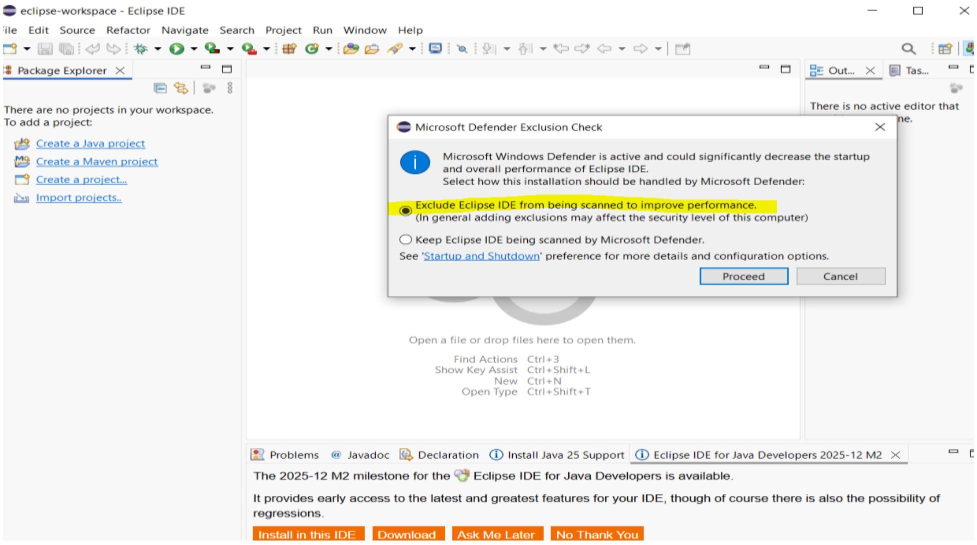


Select a directory as workspace

Eclipse IDE uses the workspace directory to store its preferences and development artifacts.

C:\Users\Duddela\eclipse-workspace

□ Use this as the default and do not ask again



There are no projects in your workspace.
To add a project:

There is no active editor that ...ne.

Microsoft Defender Exclusion Check

Microsoft Windows Defender is active and could significantly decrease the startup and overall performance of Eclipse IDE.
Select how this installation should be handled by Microsoft Defender:

● Exclude Eclipse IDE from being scanned to improve performance.
(In general adding exclusions may affect the security level of this computer)

○ Keep Eclipse IDE being scanned by Microsoft Defender.

See 'Startup and Shutdown' preference for more details and configuration options.

Open a file or drop files here to open them.

```
   Find Actions  Ctrl+3
Show Key Assist  Ctrl+Shift+L
            New  Ctrl+N
      Open Type  Ctrl+Shift+T
```

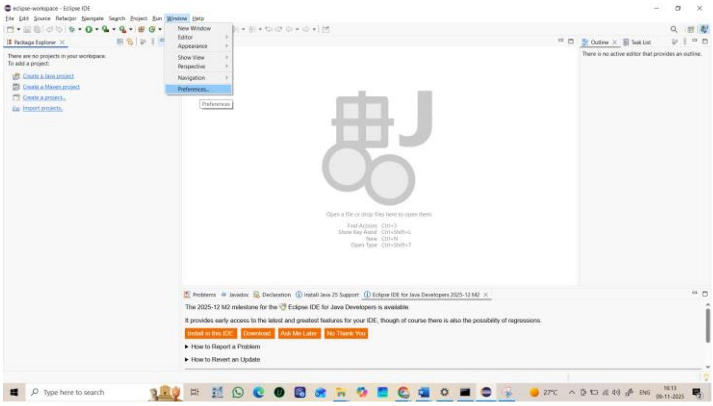
The 2025-12 M2 milestone for the Eclipse IDE for Java Developers is available.

It provides early access to the latest and greatest features for your IDE, though of course there is also the possibility of regressions.

- ➢ Verify JDK integration

Once Eclipse opens:

1. Go to **Window → Preferences**



There are no projects in your workspace.
To add a project:

There is no active editor that provides an outline.

The 2025-12 M2 milestone for the Eclipse IDE for Java Developers is available.

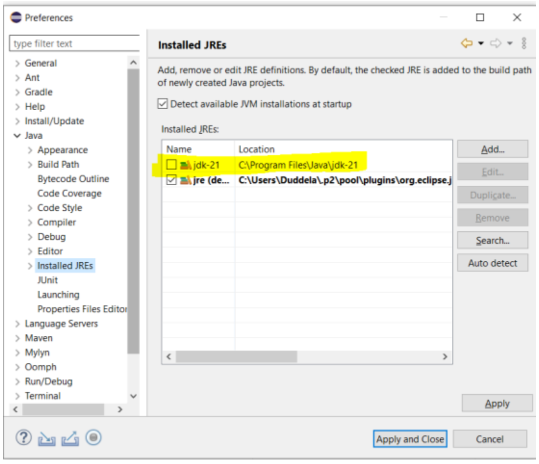
It provides early access to the latest and greatest features for your IDE, though of course there is also the possibility of regressions.

▸ How to Report a Problem

▸ How to Revert an Update

2. Expand **Java → Installed JREs**

3. Make sure you see:



Installed JREs

Add, remove or edit JRE definitions. By default, the checked JRE is added to the build path of newly created Java projects.

☑ Detect available JVM installations at startup

Installed JREs:

Name	Location
□ jdk-21	C:\Program Files\Java\jdk-21
☑ **jre (de...**	**C:\Users\Duddela\.p2\pool\plugins\org.eclipse.j**

4. If not:

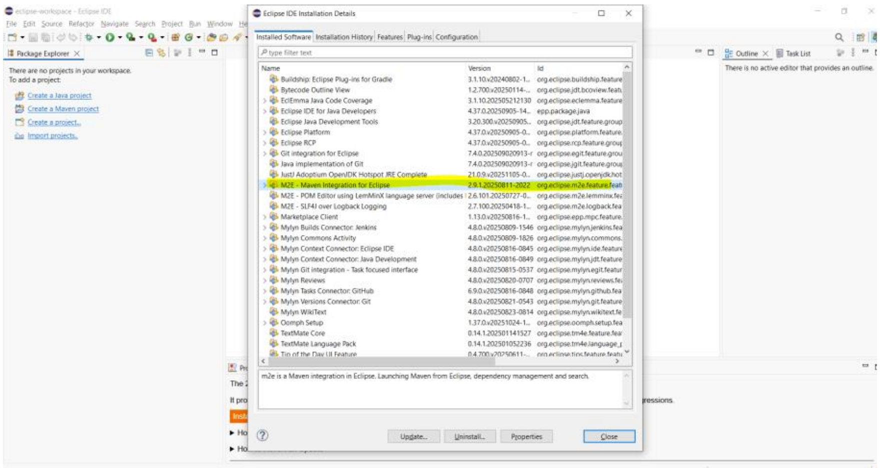
   - Click **Add → Standard VM**
   - Click **Directory**
   - Select your JDK folder (C:\Program Files\Java\jdk-21)
   - Click **Finish → Apply and Close**

Now Eclipse knows where your JDK is!

➢ Verify Maven integration

Eclipse for Java Developers already includes Maven by default. You can confirm:

1. Click **Help → About Eclipse IDE**
2. Click **Installation Details → Installed Software**
3. You should see “Maven Integration for Eclipse (m2e)”



Name	Version	Id
Buildship: Eclipse Plug-ins for Gradle	3.1.10.v20240802-1...	org.eclipse.buildship.feature
Bytecode Outline View	1.2.700.v20250114-...	org.eclipse.jdt.bcoview.featu
EclEmma Java Code Coverage	3.1.10.202505212130	org.eclipse.eclemma.feature
Eclipse IDE for Java Developers	4.37.0.20250905-14...	epp.package.java
Eclipse Java Development Tools	3.20.300.v20250905...	org.eclipse.jdt.feature.group
Eclipse Platform	4.37.0.v20250905-0...	org.eclipse.platform.feature.
Eclipse RCP	4.37.0.v20250905-0...	org.eclipse.rcp.feature.group
Git integration for Eclipse	7.4.0.202509020913-r	org.eclipse.egit.feature.grou
Java implementation of Git	7.4.0.202509020913-r	org.eclipse.jgit.feature.grou
JustJ Adoptium OpenJDK Hotspot JRE Complete	21.0.9.v20251105-0...	org.eclipse.justj.openjdk.hot
M2E - Maven Integration for Eclipse	2.9.1.20250811-2022	org.eclipse.m2e.feature.feat
M2E - POM Editor using LemMinX language server (includes	2.6.101.20250727-0...	org.eclipse.m2e.lemminx.fea
M2E - SLF4J over Logback Logging	2.7.100.20250418-1...	org.eclipse.m2e.logback.fea
Marketplace Client	1.13.0.v20250816-1...	org.eclipse.epp.mpc.feature.
Mylyn Builds Connector: Jenkins	4.8.0.v20250809-1546	org.eclipse.mylyn.jenkins.fea
Mylyn Commons Activity	4.8.0.v20250809-1826	org.eclipse.mylyn.commons.
Mylyn Context Connector: Eclipse IDE	4.8.0.v20250816-0845	org.eclipse.mylyn.ide.feature
Mylyn Context Connector: Java Development	4.8.0.v20250816-0849	org.eclipse.mylyn.jdt.feature
Mylyn Git integration - Task focused interface	4.8.0.v20250815-0537	org.eclipse.mylyn.egit.featur
Mylyn Reviews	4.8.0.v20250820-0707	org.eclipse.mylyn.reviews.fe
Mylyn Tasks Connector: GitHub	6.9.0.v20250816-0848	org.eclipse.mylyn.github.fea
Mylyn Versions Connector: Git	4.8.0.v20250821-0543	org.eclipse.mylyn.git.feature
Mylyn WikiText	4.8.0.v20250823-0814	org.eclipse.mylyn.wikitext.fe
Oomph Setup	1.37.0.v20251024-1...	org.eclipse.oomph.setup.fea
TextMate Core	0.14.1.202501141527	org.eclipse.tm4e.feature.fea
TextMate Language Pack	0.14.1.202501052236	org.eclipse.tm4e.language_
Tip of the Day UI Feature	0.4.700.v20250611-...	org.eclipse.tips.feature.featu

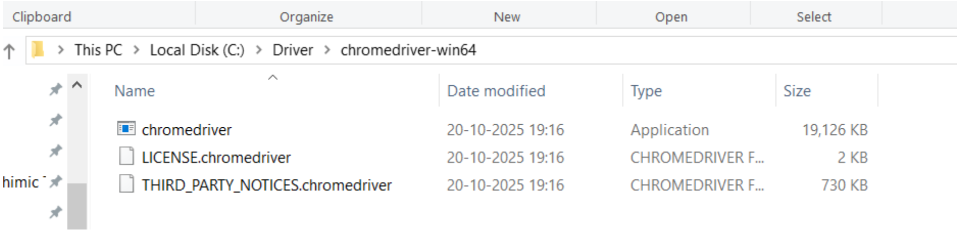
m2e is a Maven integration in Eclipse. Launching Maven from Eclipse, dependency management and search.

Step 4: Download ChromeDriver

- ➢ Selenium cannot open chrome browser, unless ChromeDriver is installed.
- ➢ Check your chrome version (Chrome://settings/help)
- ➢ Download matching ChromeDriver
- ➢ Extract and place it in C and add path in code.

Ex. For chrome browser of version **141.0.7390.123**
👉https://edgedl.me.gvt1.com/edgedl/chrome/chrome-for-testing/141.0.7390.123/win64/chromedriver-win64.zip

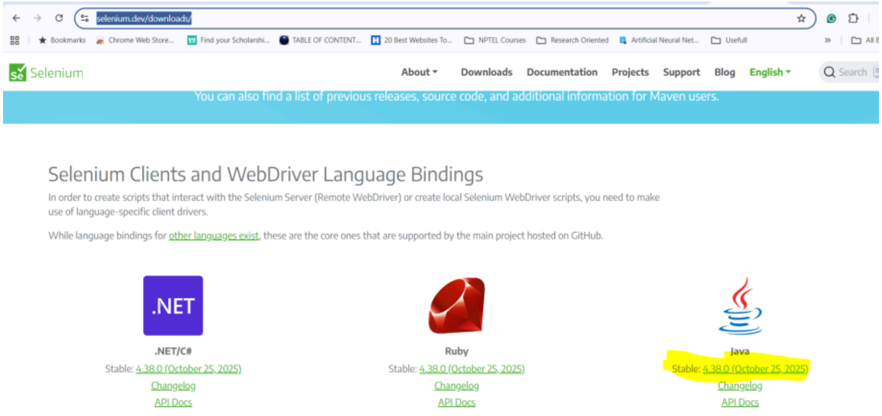
After extracting, the single file should look like below



Name	Date modified	Type	Size
chromedriver	20-10-2025 19:16	Application	19,126 KB
LICENSE.chromedriver	20-10-2025 19:16	CHROMEDRIVER F...	2 KB
THIRD_PARTY_NOTICES.chromedriver	20-10-2025 19:16	CHROMEDRIVER F...	730 KB

Step 5: Download Selenium Java JARs

- ➢ Download link : https://www.selenium.dev/downloads/
- ➢ Click below link to download latest Selenium java zip.



selenium.dev/downloads/

You can also find a list of previous releases, source code, and additional information for Maven users.

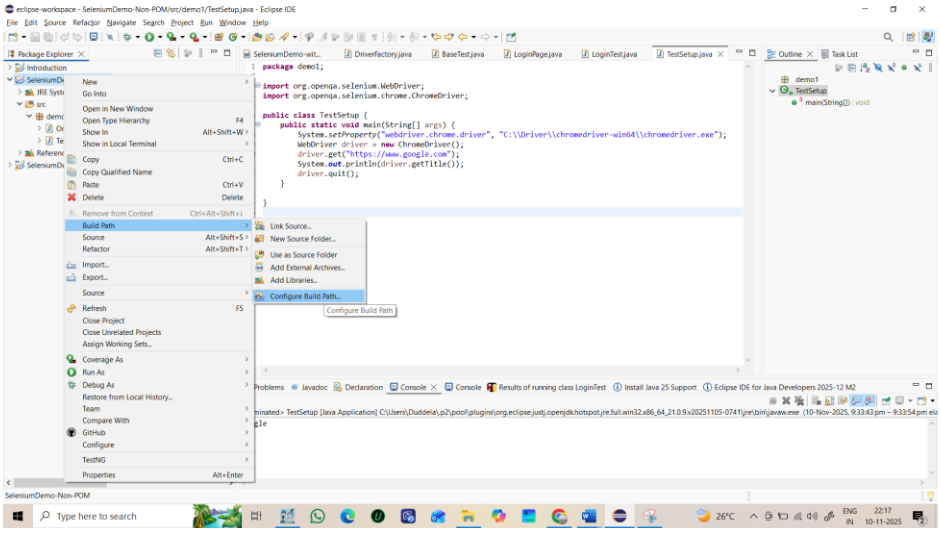
Selenium Clients and WebDriver Language Bindings

In order to create scripts that interact with the Selenium Server (Remote WebDriver) or create local Selenium WebDriver scripts, you need to make use of language-specific client drivers.

While language bindings for other languages exist, these are the core ones that are supported by the main project hosted on GitHub.

.NET/C#	Ruby	Java
Stable: 4.38.0 (October 25, 2025)	Stable: 4.38.0 (October 25, 2025)	Stable: 4.38.0 (October 25, 2025)
Changelog	Changelog	Changelog
API Docs	API Docs	API Docs

- ➢ Extract the ZIP to C drive.
- ➢ Create a Java Project. File → New → Java Project → Name: SeleniumDemo-Non-POM
- ➢ Go to configure build path.

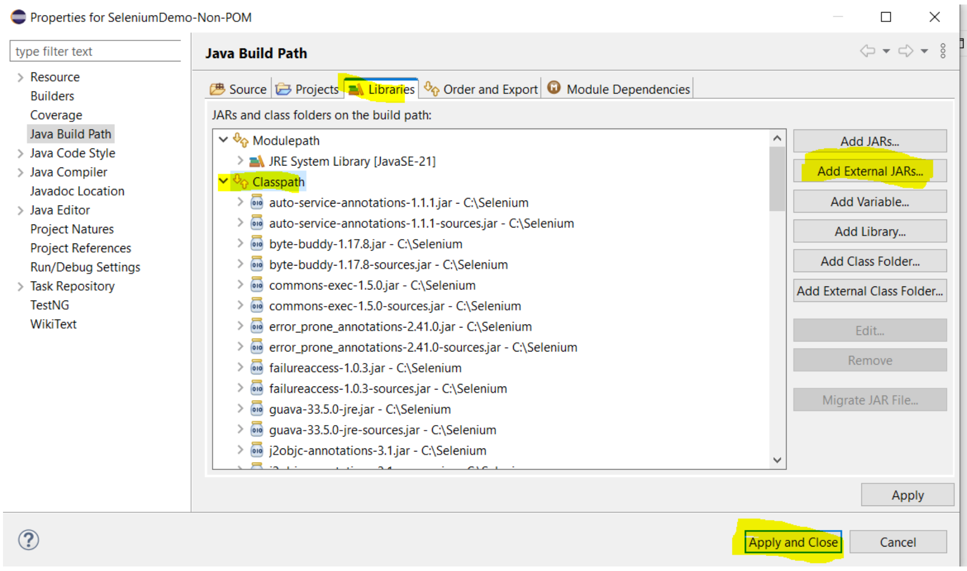


eclipse-workspace - SeleniumDemo-Non-POM/src/demo1/TestSetup.java - Eclipse IDE

```java
package demo1;

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

public class TestSetup {
    public static void main(String[] args) {
        System.setProperty("webdriver.chrome.driver", "C:\\Driver\\chromedriver-win64\\chromedriver.exe");
        WebDriver driver = new ChromeDriver();
        driver.get("https://www.google.com");
        System.out.println(driver.getTitle());
        driver.quit();
    }

}
```

```
minated> TestSetup [Java Application] C:\Users\Duddela\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.9.v20251105-0741\jre\bin\javaw.exe (10-Nov-2025, 9:33:43 pm – 9:33:54 pm ela
gle
```

- ➢ Under Libraries → select classpath → click Add external JARs → select the location of above extracted ZIP file → click apply and close.

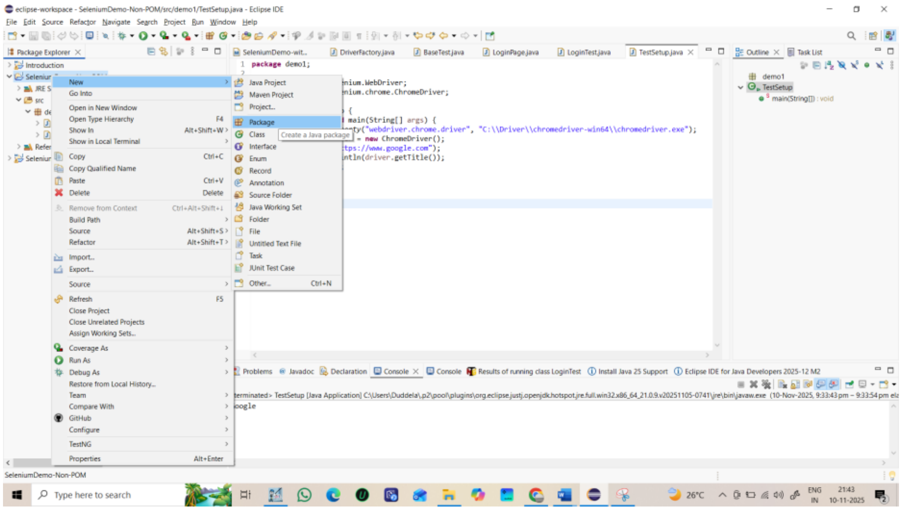


JARs and class folders on the build path:

- Modulepath
  - JRE System Library [JavaSE-21]
- Classpath
  - auto-service-annotations-1.1.1.jar - C:\Selenium
  - auto-service-annotations-1.1.1-sources.jar - C:\Selenium
  - byte-buddy-1.17.8.jar - C:\Selenium
  - byte-buddy-1.17.8-sources.jar - C:\Selenium
  - commons-exec-1.5.0.jar - C:\Selenium
  - commons-exec-1.5.0-sources.jar - C:\Selenium
  - error_prone_annotations-2.41.0.jar - C:\Selenium
  - error_prone_annotations-2.41.0-sources.jar - C:\Selenium
  - failureaccess-1.0.3.jar - C:\Selenium
  - failureaccess-1.0.3-sources.jar - C:\Selenium
  - guava-33.5.0-jre.jar - C:\Selenium
  - guava-33.5.0-jre-sources.jar - C:\Selenium
  - j2objc-annotations-3.1.jar - C:\Selenium

Step 6: Verify Setup

- ➢ Create a package under the above java project and name it demo1. Then create a class in the package and name it TestSetup.



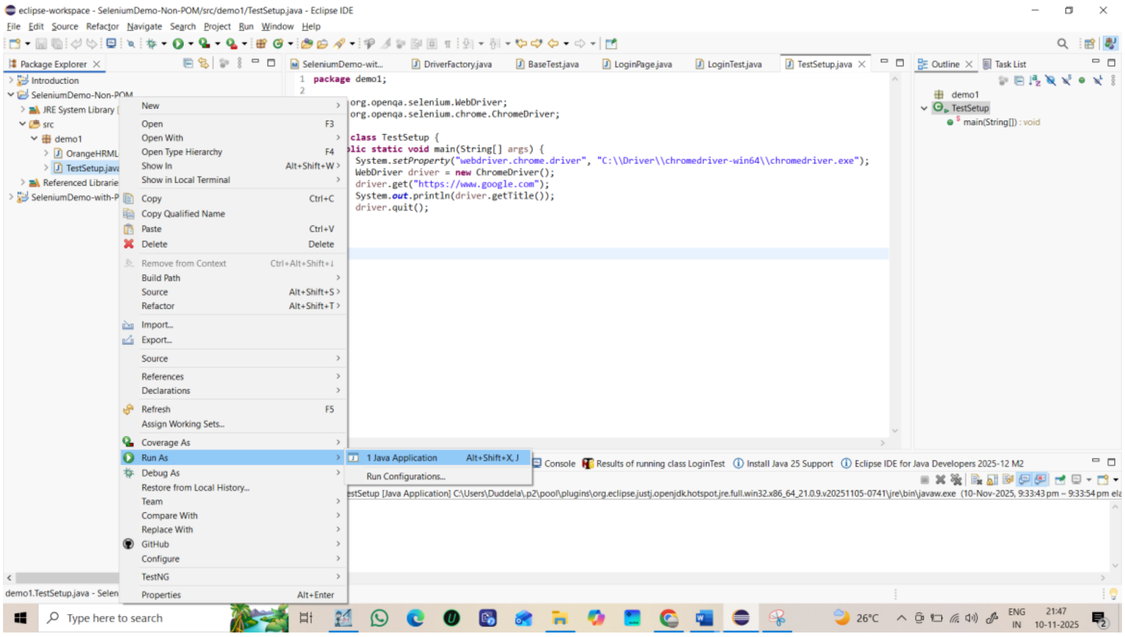
```
package demo1;
...nium.WebDriver;
...nium.chrome.ChromeDriver;
... {
... main(String[] args) {
...ty("webdriver.chrome.driver", "C:\\Driver\\chromedriver-win64\\chromedriver.exe");
... = new ChromeDriver();
...tps://www.google.com");
...ntln(driver.getTitle());
```

```
<terminated> TestSetup [Java Application] C:\Users\Duddela\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.9.v20251105-0741\jre\bin\javaw.exe (10-Nov-2025, 9:33:43 pm – 9:33:54 pm el
oogle
```

- ➢ Paste the below code and run as java application.

```
package demo1;

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

public class TestSetup {
		public static void main(String[] args) {
			System.setProperty("webdriver.chrome.driver",
"C:\\Driver\\chromedriver-win64\\chromedriver.exe");
			WebDriver driver = new ChromeDriver();
			driver.get("https://www.google.com");
			System.out.println(driver.getTitle());
			driver.quit();
		}
```

- ➢ Right click the class and run as java application



eclipse-workspace - SeleniumDemo-Non-POM/src/demo1/TestSetup.java - Eclipse IDE

```
1  package demo1;
2
   org.openqa.selenium.WebDriver;
   org.openqa.selenium.chrome.ChromeDriver;

   class TestSetup {
   lic static void main(String[] args) {
    System.setProperty("webdriver.chrome.driver", "C:\\Driver\\chromedriver-win64\\chromedriver.exe");
    WebDriver driver = new ChromeDriver();
    driver.get("https://www.google.com");
    System.out.println(driver.getTitle());
    driver.quit();
```

```
estSetup [Java Application] C:\Users\Duddela\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_21.0.9.v20251105-0741\jre\bin\javaw.exe  (10-Nov-2025, 9:33:43 pm – 9:33:54 pm ela
```

- ➢ Expected output is, chrome will be launched and google browser opens and google page title is printed in console.