



Name: Naman Singh

Sap Id: 500123185

Batch: 2 (CCVT)

Submitted to

Dr. Satyam Tiwari

# ★ Introduction to Java environment

## ● Java Development Kit (JDK)

The **Java Development Kit (JDK)** is a software package that provides the tools and libraries necessary for developing, compiling, and running Java applications. It consists of several components:

## ● Java Runtime Environment

The **Java Runtime Environment (JRE)** is what you need to **run** Java programs. It includes everything required to execute Java applications but **not** the tools needed to develop them. If you just want to **use** Java applications, the JRE is enough. But if you want to **create** Java programs, you'll need the **Java Development Kit (JDK)**, which includes additional tools like a compiler and debugger.

## ● Java Virtual Machine (JVM)

The **Java Virtual Machine (JVM)** is what makes Java truly platform-independent. It acts as a bridge between your Java program and the underlying operating system. When you write Java code and compile it, it gets converted into **bytecode**—an intermediate, platform-neutral format. The JVM then **interprets and**

**executes** this bytecode, ensuring that your program runs smoothly.

# ★ Downloading JAVA

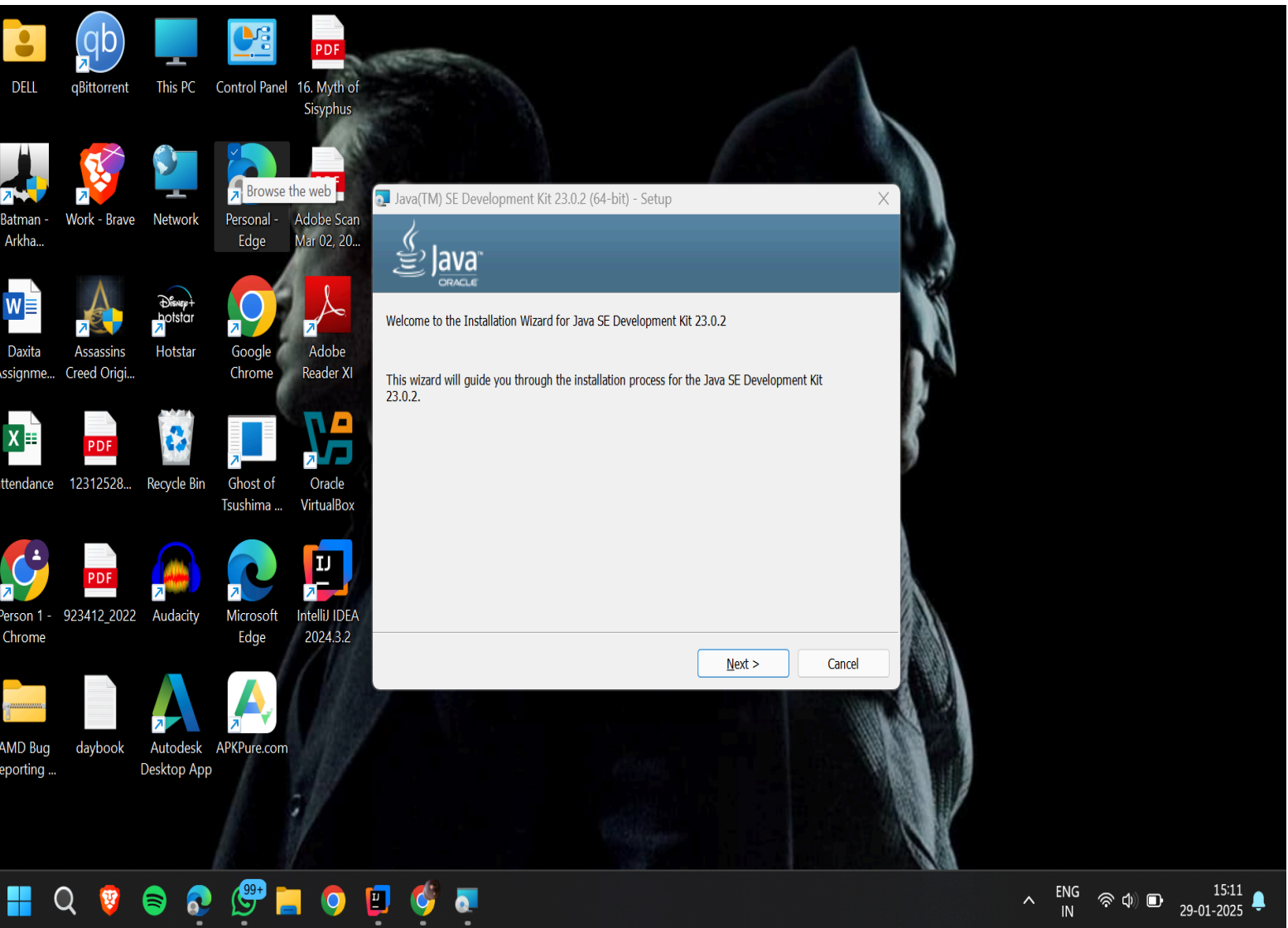
The screenshot shows the Oracle Java Downloads page for JDK 23 on Windows. The browser tabs include Outlook, Mail, Canvas Login, Oracle, and Java Downloads | Oracle. The address bar shows the URL: [oracle.com/java/technologies/downloads/#jdk23-windows](https://www.oracle.com/java/technologies/downloads/#jdk23-windows). The page has a navigation bar with "Tools and resources", "Java downloads" (selected), and "Java archive". Below the navigation bar, a message states: "JDK 23 will receive updates under these terms, until March 2025, when it will be superseded by JDK 24." The "Windows" tab is selected under the "Linux", "macOS", and "Windows" tabs. A table lists the download options for Windows:

Product/file description	File size	Download
x64 Compressed Archive	228.77 MB	<a href="https://download.oracle.com/java/23/latest/jdk-23_windows-x64_bin.zip">https://download.oracle.com/java/23/latest/jdk-23_windows-x64_bin.zip</a> (sha256)
x64 Installer	205.27 MB	<a href="https://download.oracle.com/java/23/latest/jdk-23_windows-x64_bin.exe">https://download.oracle.com/java/23/latest/jdk-23_windows-x64_bin.exe</a> (sha256)
x64 MSI Installer	204.02 MB	<a href="https://download.oracle.com/java/23/latest/jdk-23_windows-x64_bin.msi">https://download.oracle.com/java/23/latest/jdk-23_windows-x64_bin.msi</a> (sha256)

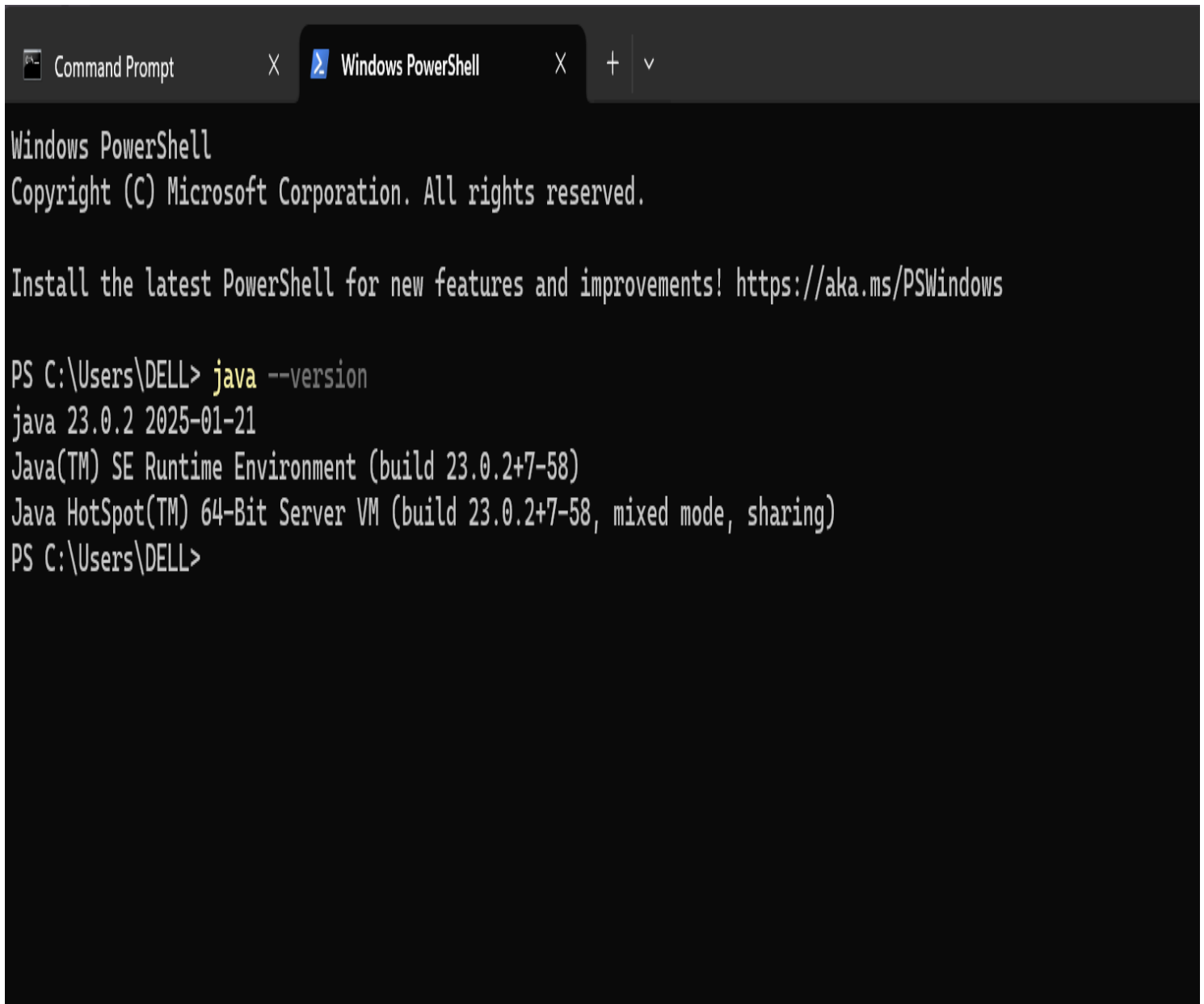
Below the table is a "Documentation Download" button. Under "Release information", there are links for "Online Documentation" and "Installation Instructions". The Windows taskbar at the bottom shows various application icons and the system tray with the date 29-01-2025.

This screenshot is similar to the previous one but includes a "Recent download history" popup. The popup shows the download of "jdk-23\_windows-x64\_bin (1).exe" with a progress bar indicating 2.3/205 MB downloaded and 12 minutes left. The "Full download history" link is also visible. The rest of the page content, including the navigation bar, message, tabs, table, and taskbar, is identical to the previous screenshot.

# ★ Installing Java



# ★ Verifying Java Version



```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\DELL> java --version
java 23.0.2 2025-01-21
Java(TM) SE Runtime Environment (build 23.0.2+7-58)
Java HotSpot(TM) 64-Bit Server VM (build 23.0.2+7-58, mixed mode, sharing)
PS C:\Users\DELL>
```

# ★ Sample Program

File Edit View

```
public class helworld {  
    public static void main(String[] args) {  
        System.out.println("Hello World");  
    }  
}
```

Command Prompt

Microsoft Windows [Version 10.0.22631.4602]  
(c) Microsoft Corporation. All rights reserved.

```
C:\Users\DELL>javac helworld.java  
error: file not found: helworld.java  
Usage: javac <options> <source files>  
use --help for a list of possible options
```

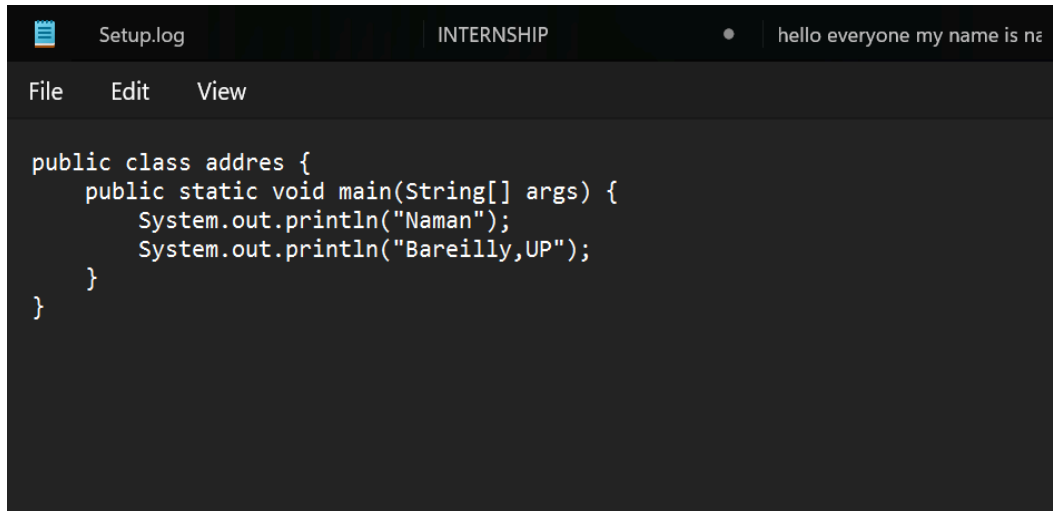
```
C:\Users\DELL>cd C:\Users\DELL\IdeaProjects\javanew\src
```

```
C:\Users\DELL\IdeaProjects\javanew\src>javac helworld.java
```

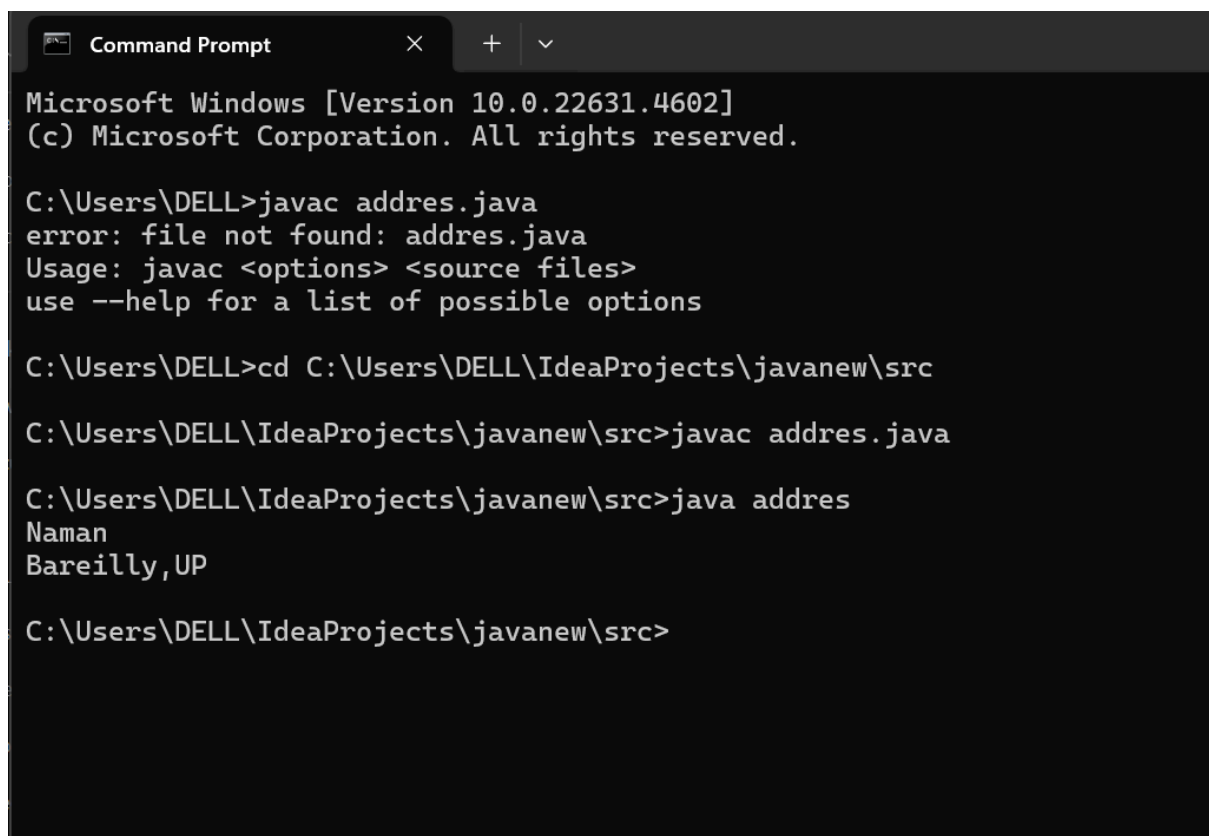
```
C:\Users\DELL\IdeaProjects\javanew\src>java helworld  
Hello World
```

```
C:\Users\DELL\IdeaProjects\javanew\src>|
```

# ★ Printing address in next line



```
Setup.log | INTERNSHIP | hello everyone my name is nã  
File Edit View  
  
public class address {  
    public static void main(String[] args) {  
        System.out.println("Naman");  
        System.out.println("Bareilly,UP");  
    }  
}
```



```
Command Prompt  
Microsoft Windows [Version 10.0.22631.4602]  
(c) Microsoft Corporation. All rights reserved.  
  
C:\Users\DELL>javac address.java  
error: file not found: address.java  
Usage: javac <options> <source files>  
use --help for a list of possible options  
  
C:\Users\DELL>cd C:\Users\DELL\IdeaProjects\javanew\src  
  
C:\Users\DELL\IdeaProjects\javanew\src>javac address.java  
  
C:\Users\DELL\IdeaProjects\javanew\src>java address  
Naman  
Bareilly,UP  
  
C:\Users\DELL\IdeaProjects\javanew\src>
```