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# Software Engineering

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## Notes

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### 1st Class

JDK installation - The Java Development Kit (JDK) is a cross-platformed software development environment that offers a collection of tools and libraries necessary for developing Java-based software applications and applets. It is a core package used in Java.

Download - [Link](#)

Environment Variable - [Link](#)

Multiple Java Usage - method 1 : <https://sdkman.io/>

Method 2 :

Maven and spring Boot

**SerialS : JDK ->Git Bash -> Maven ->Multiple JDK -> Spring Boot ->**

### Maven

**Intro :** Maven is a build automation tool primarily used for Java projects. It addresses two main aspects of building software: dependency management and project build lifecycle management.

It simplifies the build process by managing dependencies, compiling source code, packaging it into a deliverable (such as a JAR file), and deploying it to a repository.

Maven is based on the concept of a Project Object Model (POM), which is a central piece of information that manages a project's build, reporting, and documentation.

Video :   [Maven Crash Course | Learn maven in one video in Hindi](#)

Maven is a powerful project management tool that is based on POM (project object model). It is used for project build, dependency, and documentation. It simplifies the build process like ANT. But it is much more advanced than ANT. In short terms we can tell maven is a tool that can be used for building and managing any Java-based project. maven makes the day-to-day work of Java developers easier and generally helps with the comprehension of any Java-based project.

What Is Maven?

Maven is mostly used for the java projects to build web application packages. Maven provides different features which make it easy to build the web-application packages we manage complex projects easily.

Link : [Link](#)

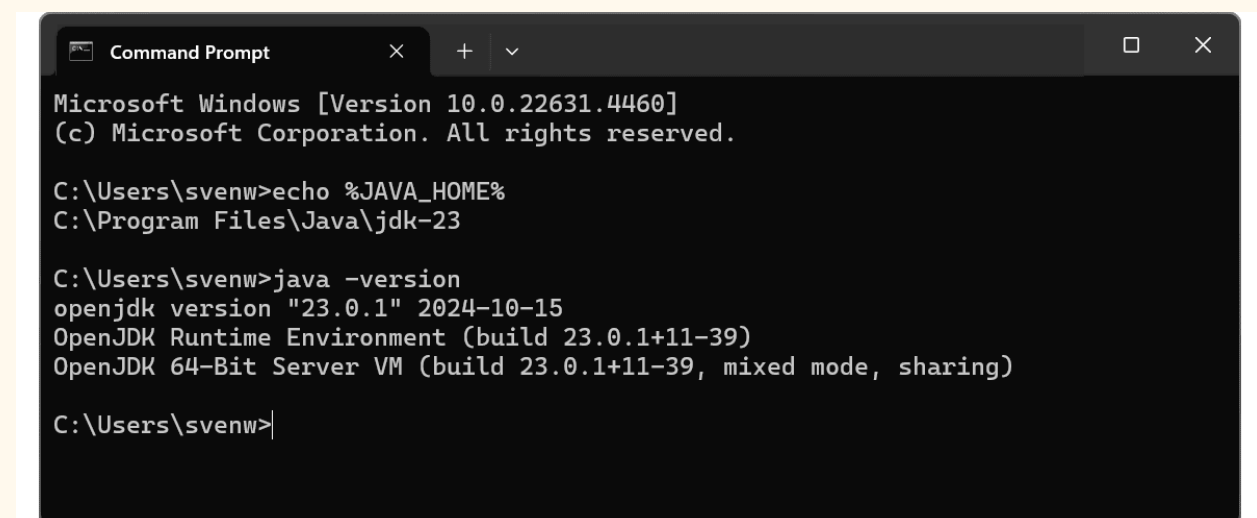
Install : [Link](#)

Command : `mvn -version`

Command Panel Cmts :

```
echo %JAVA_HOME%
```

```
java -version
```



```
Command Prompt
Microsoft Windows [Version 10.0.22631.4460]
(c) Microsoft Corporation. All rights reserved.

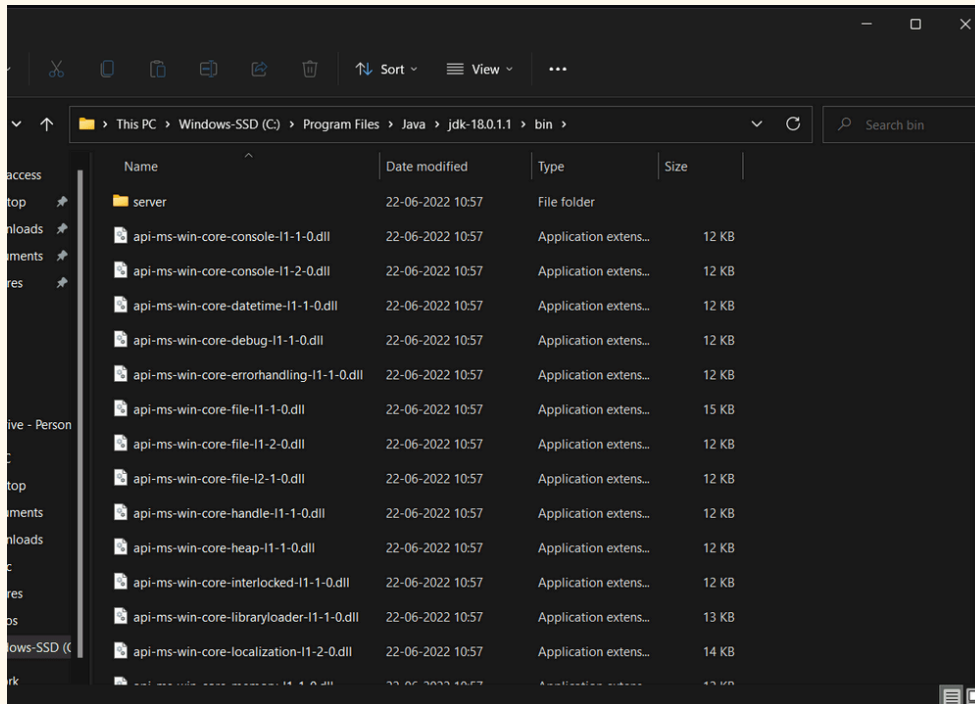
C:\Users\svenw>echo %JAVA_HOME%
C:\Program Files\Java\jdk-23

C:\Users\svenw>java -version
openjdk version "23.0.1" 2024-10-15
OpenJDK Runtime Environment (build 23.0.1+11-39)
OpenJDK 64-Bit Server VM (build 23.0.1+11-39, mixed mode, sharing)

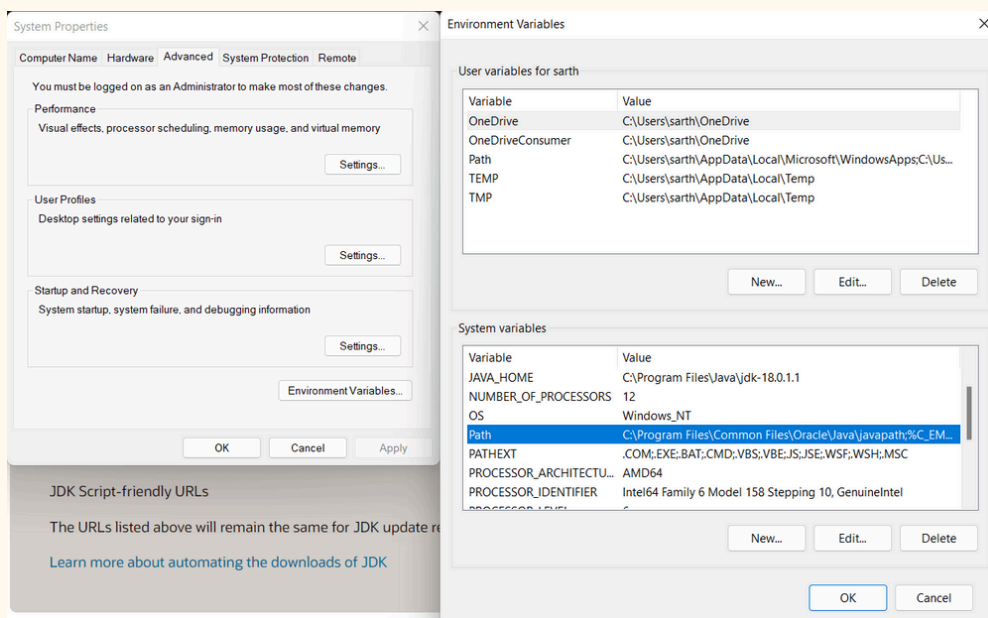
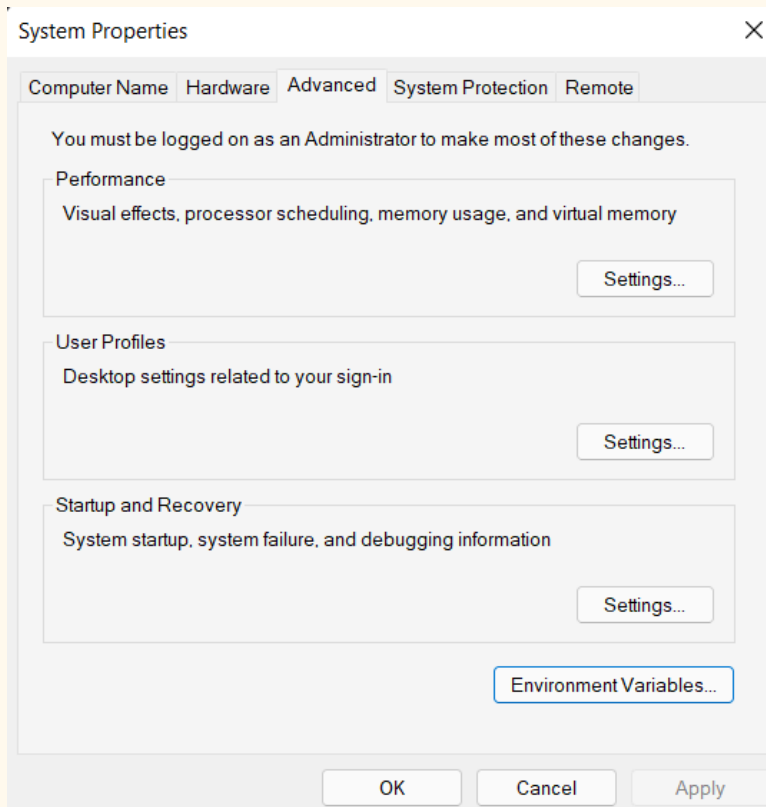
C:\Users\svenw>
```

**Configure Environment Variables**

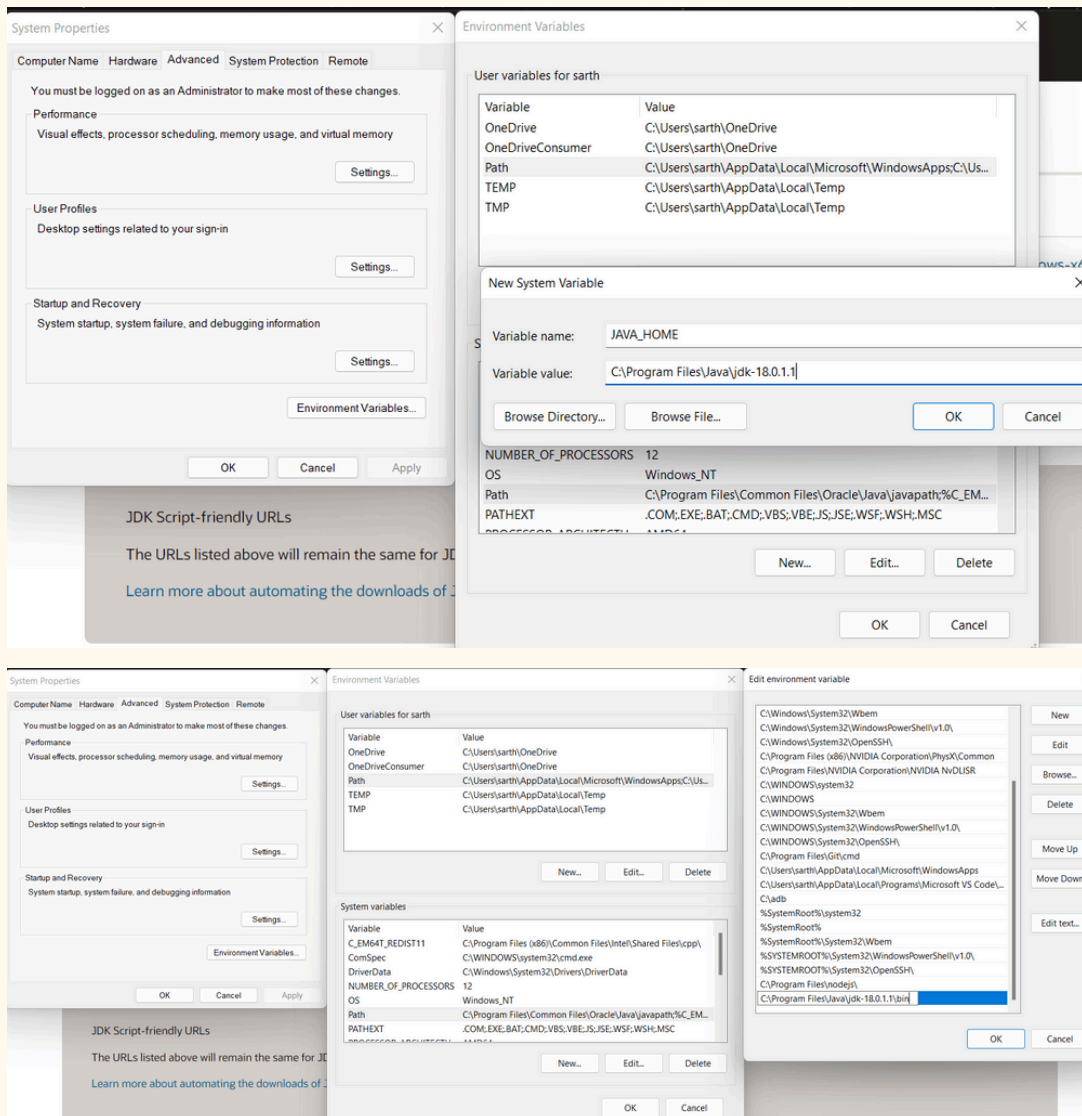
1. After the installation is complete, we have to configure environment variables to notify the system about the directory in which JDK files are located. Proceed to C:\Program Files\Java\jdk-{YOUR\_JDK\_VERSION}\bin (replace {-} with your JDK version)



2. To set the Environment Variables, you need to search Environment Variables in the Task Bar and click on “Edit the system environment variables”.



- Under System variables, select the “Path” variable and click on “Edit”. Click on “New” then paste the Path Address i.e. C:\Program Files\Java\jdk-{YOUR\_JDK\_VERSION}\bin. Click on “OK”.



Now, in the Environment Variables dialogue, under System variables, click on “New” and then under Variable name: JAVA\_HOME and Variable value: paste address i.e. C:\Program Files\Java\jdk-{YOUR\_JDK\_VERSION}. Click on OK => OK => OK.

## Git

Video : [Complete Git and GitHub Tutorial for Beginners](#)

## Spring Boot

Java Framework type which gives you an environment to learn Spring and Java. It will automatically inject Dependencies to your devices.

Install Video : [📺 Spring Boot Using VSCode](#)

More Info : [📺 Spring Boot Tutorials | Full Course](#)

### **Multiple JDK :**

Method 1 : SDKman

Method 2 : .bat file [JDK](#)

Java Install : 8, 11, 17, 21