JAVA DEVELOPMENT KIT

The Java Development Kit (JDK) is a software development environment used for developing Java applications and applets. It includes the Java Runtime Environment (JRE), an interpreter/loader (Java), a compiler (javac), an archiver (jar), a documentation generator (Javadoc) and other tools needed in Java development.

JAVA RUNTIME ENVIRONMENT

JRE stands for "Java Runtime Environment" and may also be written as "Java RTE." The Java Runtime Environment provides the minimum requirements for executing a Java application; it consists of the Java Virtual Machine (JVM), core classes, and supporting files.

JAVA VIRTUAL MACHINE

It is:

- A specification where working of Java Virtual Machine is specified. But implementation provider is independent to choose the algorithm. Its implementation has been provided by Sun and other companies.
- An implementation is a computer program that meets the requirements of the JVM specification
- Runtime Instance Whenever you write java command on the command prompt to run the java class, an instance of JVM is created.

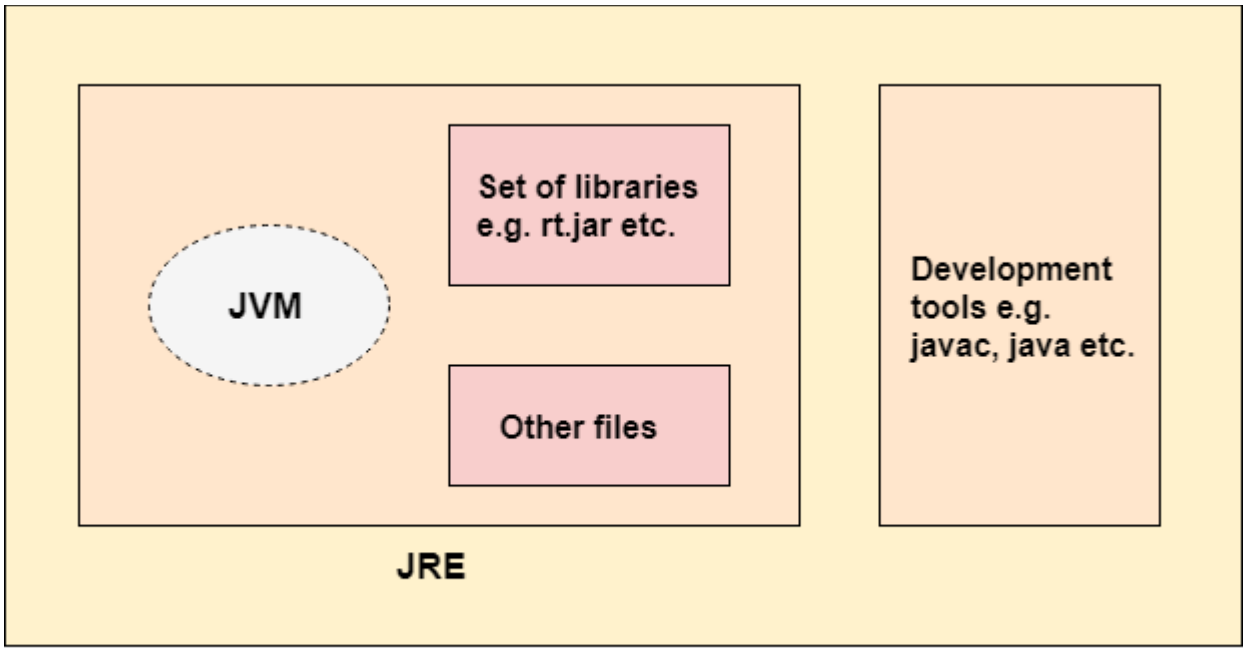
JDK

JDK is an acronym for Java Development Kit. The Java Development Kit (JDK) is a software development environment which is used to develop Java applications and applets. It physically exists. It contains JRE + development tools.

JDK is an implementation of any one of the below given Java Platforms released by Oracle Corporation:

- Standard Edition Java Platform
- Enterprise Edition Java Platform
- Micro Edition Java Platform

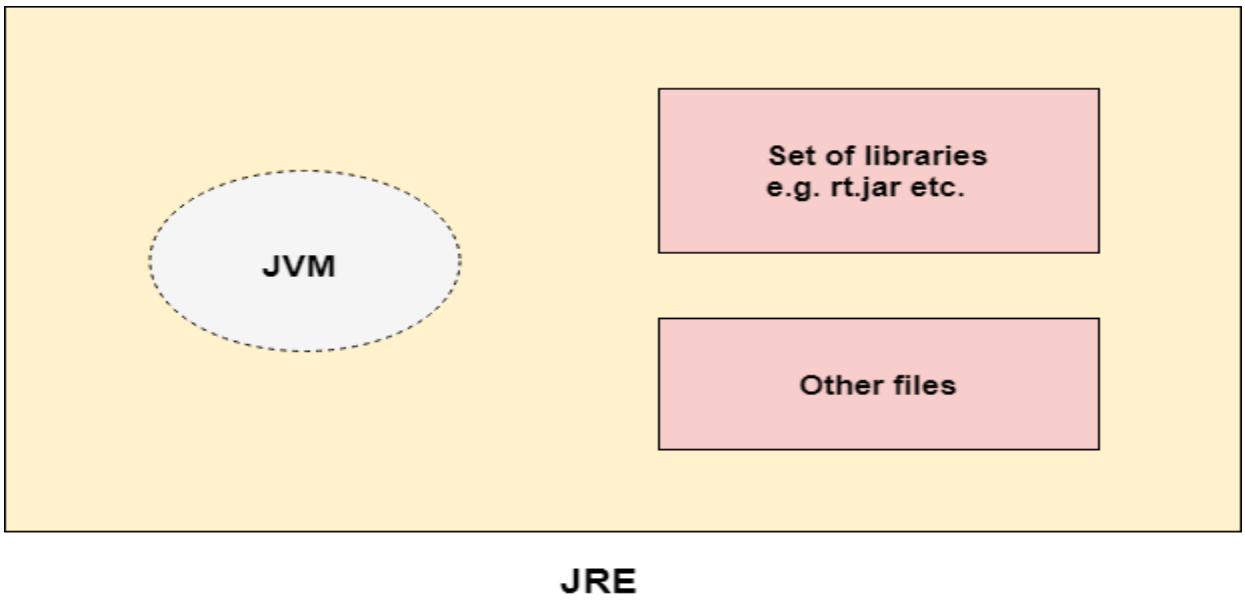
The JDK contains a private Java Virtual Machine (JVM) and a few other resources such as an interpreter/loader (java), a compiler (javac), an archiver (jar), a documentation generator (Javadoc), etc. to complete the development of a Java Application.



JRE

JRE is an acronym for Java Runtime Environment. It is also written as Java RTE. The Java Runtime Environment is a set of software tools which are used for developing Java applications. It is used to provide the runtime environment. It is the implementation of JVM. It physically exists. It contains a set of libraries + other files that JVM uses at runtime.

The implementation of JVM is also actively released by other companies besides Sun Micro Systems.



JVM

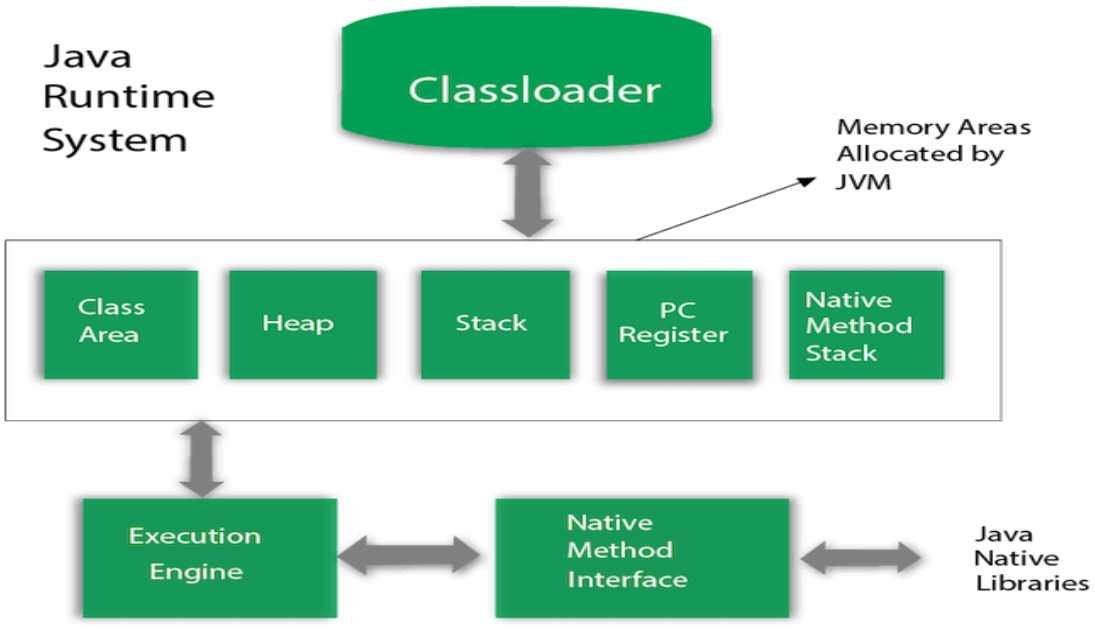
JVM (Java Virtual Machine) is an abstract machine. It is a specification that provides runtime environment in which java bytecode can be executed.

JVMs are available for many hardware and software platforms (i.e. JVM is platform dependent).

The JVM performs following operation:

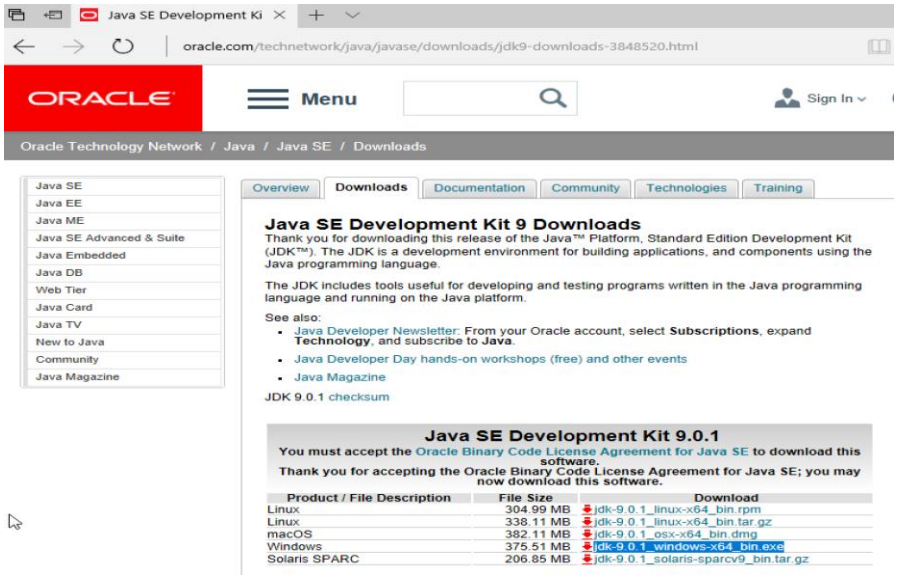
- Loads code
- Verifies code
- Executes code
- Provides runtime environment

JVM Architecture

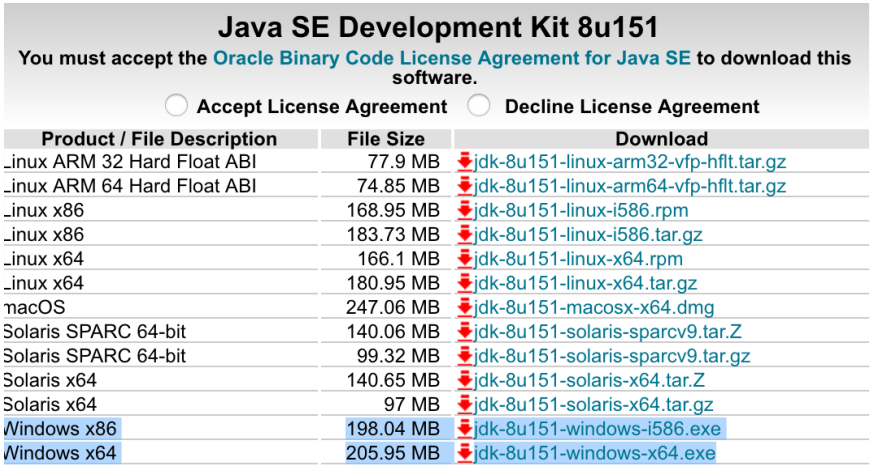


1. **Java Download for Windows10**

   First step is to download java installation files from Oracle's website. Java 9 is the latest version, so go to this link and accept the license agreement. Then click on the download link for windows as shown in below image and save the file.



Note: If you are trying to install Java 8 or earlier, then you need to know whether your Windows 10 is 32-bit or 64-bit. It's because there are two different installers for Windows as seen in this link for Java 8 binaries.

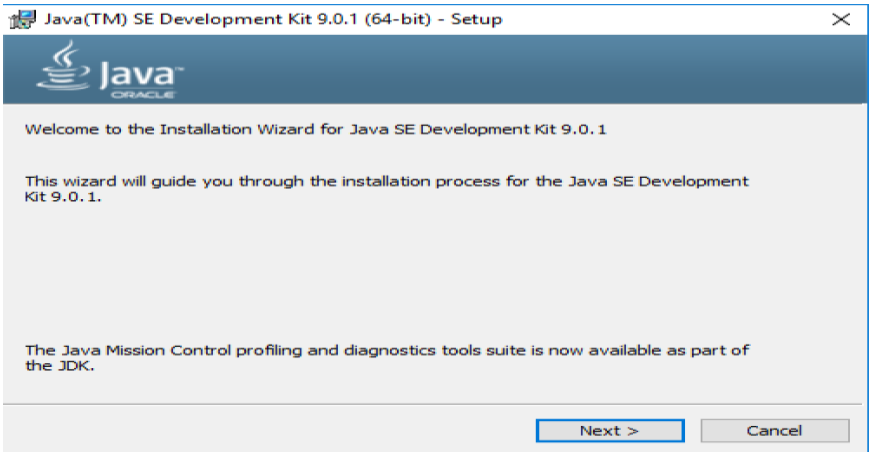


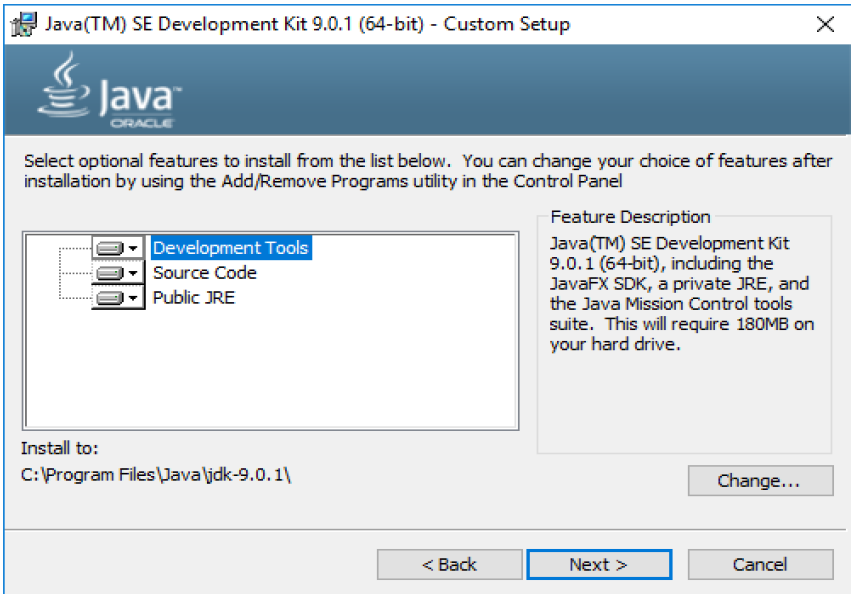
If your Windows 10 is 32-bit OS then download Windows x86 exe file, else download Windows x64 exe file.

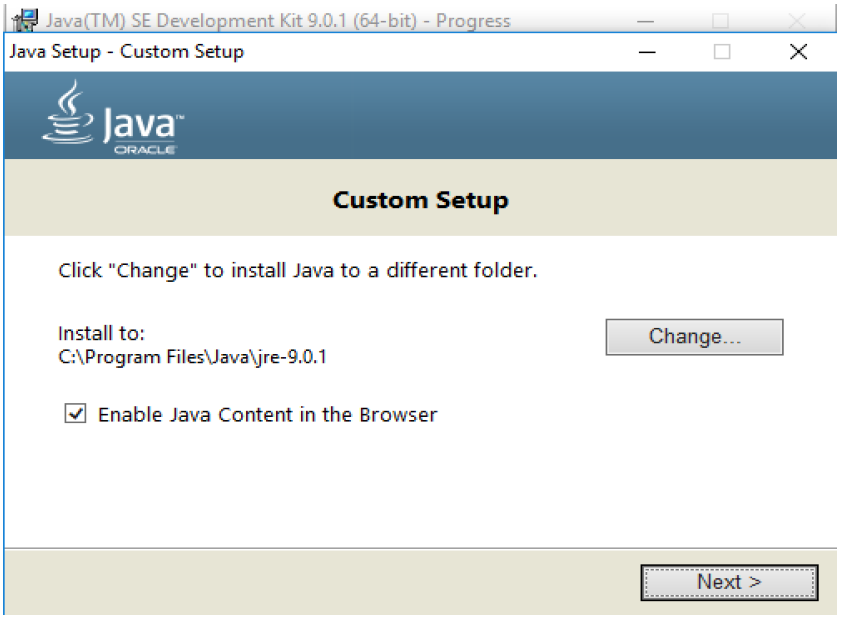
If you are not sure of your Windows version, you can easily check it in Settings > System Settings > About.

1. Java Windows10 installation steps

Next step is to run the downloaded java installer executable file. Just double click on it and follow the steps. Most of the time you don't need to check anything and go with default selection, below are images from my installation screens. They might differ a little bit based on your java version installation but mostly it's the same as usual.






Java(TM) SE Development Kit 9.0.1 (64-bit) - Progress
Java Setup - Custom Setup
Java
ORACLE
Custom Setup
Click "Change" to install Java to a different folder.
Install to:
C:\Program Files\Java\jre-9.0.1
Change...
Enable Java Content in the Browser
Next >

Java Setup - Progress
Java
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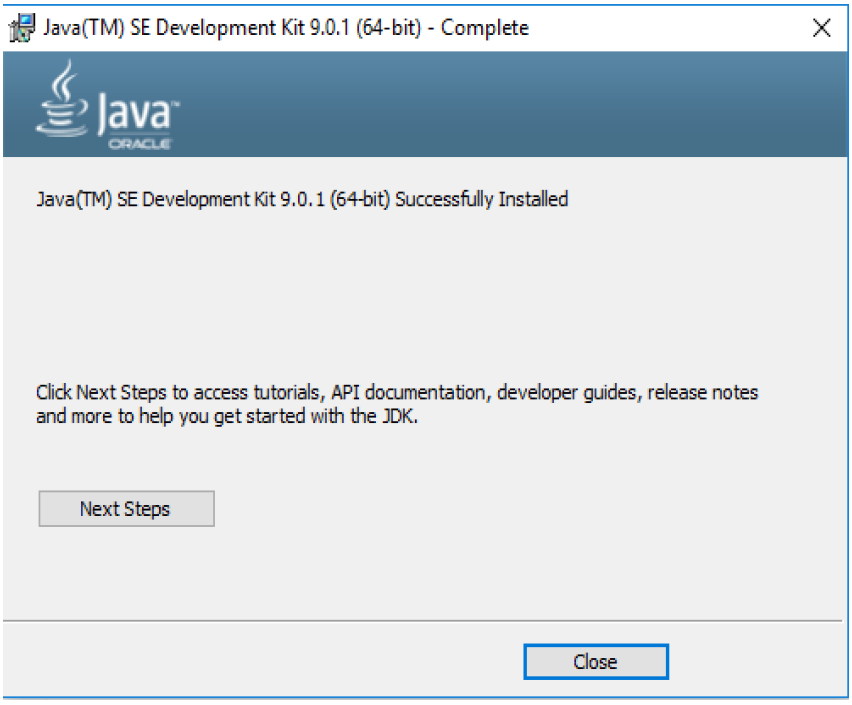
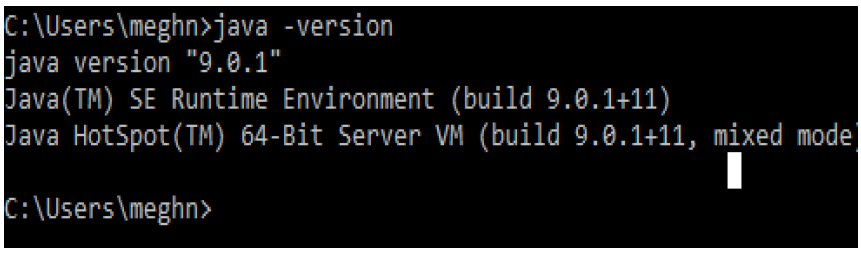

Java(TM) SE Development Kit 9.0.1 (64-bit) - Complete
Java
ORACLE
Java(TM) SE Development Kit 9.0.1 (64-bit) Successfully Installed
Click Next Steps to access tutorials, API documentation, developer guides, release notes and more to help you get started with the JDK.
Next Steps
Close

2. Java on Windows 10 Version Check

Finally, we have to check if java is installed properly or not. We can do that by using java -version command in command prompt, as shown in below image.



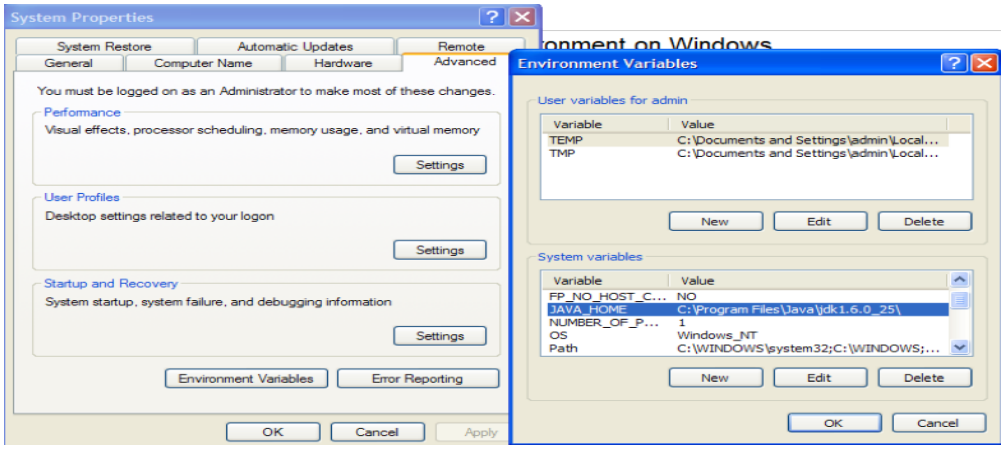
Note: In older java versions and other windows operating systems, you need to set up two environment variables to get it working.

Go to System Properties (Right Click on My Computer and select Properties) > Advanced > Environment Variables.

In the popup window, System variables section, click on New button and add a variable with the following details:

Name: JAVA_HOME

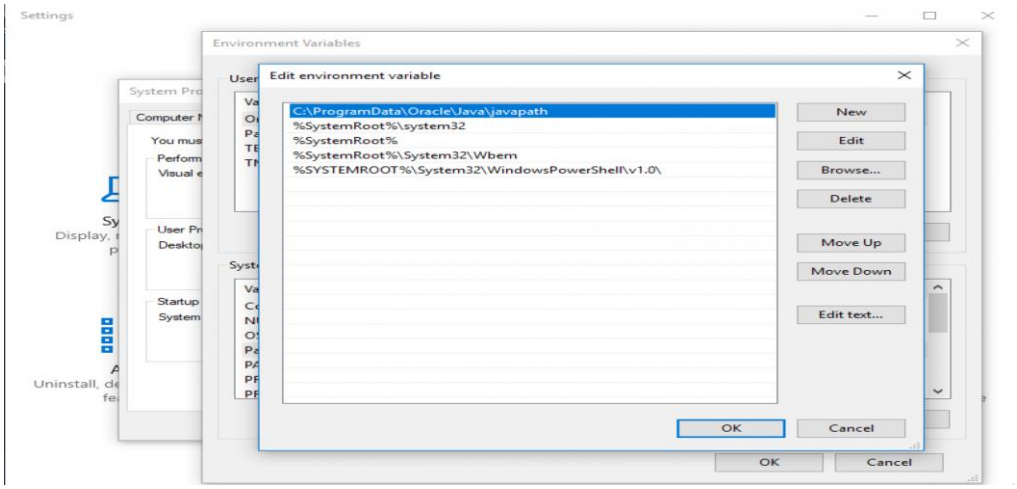
Value: C:\Program Files\Java\jdk1.6.0_25



After this, you need to edit the Path variable already present there. Just select the Path variable and click on Edit button. In the popup window value section, go to the end and add the following ;C:\Program Files\Java\jdk1.6.0_25\bin (The colon is used as a delimiter, so don't miss that!)

Now your setup is done and you can check it by opening a command prompt and running command java - version.

In Windows 10 and Java 9, we don't need to do these manually. Java installer takes care of that and you can check environment variable Path value, as shown in below image. Note that we don't need to set the JAVA_HOME variable.



1. **Download and Install Java IDE**

This is an optional step but highly recommended. If you want to get things done easily, you should install either Eclipse, Intellij Idea or NetBeans IDE that helps a lot in development of java programs. Just download and install it with executable file, they are straight forward.