**Eclipse and JDK Installation:**

### How To Install JDK on Windows

##### Step 0: Un-Install Older Version(s) of JDK/JRE

I recommend that you install only the latest JDK. Although you can install multiple versions of JDK/JRE concurrently, it is messy.

If you have previously installed older version(s) of JDK/JRE, un-install ALL of them. Go to "Control Panel" ⇒ (optional) "Programs" ⇒ "Programs and Features" ⇒ Un-install ALL programs begin with "Java", such as "Java SE Development Kit ...", "Java SE Runtime ...", "Java X Update ...", and etc.

##### Step 1: Download JDK

1. Goto JavaSE download site @ <http://www.oracle.com/technetwork/java/javase/downloads/index.html>
2. Under "Java Platform, Standard Edition" ⇒ "Java SE 11.0.{x}", where {x} denotes a fast running security-update number ⇒ Click the "Oracle JDK" "Download" button.
3. Under "Java SE Development Kit 11.0.{x}" ⇒ Check "Accept License Agreement".
4. Choose the JDK for your operating system, i.e., "Windows". Download the "**exe**" installer (e.g., "jdk-11.0.{x}\_windows-x64\_bin.**exe**" - about 150MB).

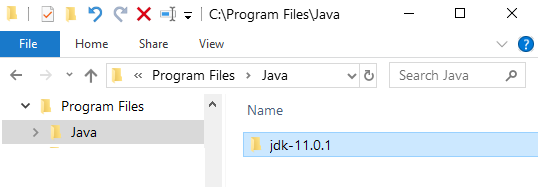
##### Step 2: Install JDK

Run the downloaded installer (e.g., "jdk-11.0.{x}\_windows-x64\_bin.exe"), which installs both the JDK and JRE.

By default, JDK is installed in directory "C:\Program Files\Java\jdk-11.0.{x}", where {x} denotes the update number. Accept the defaults and follow the screen instructions to install JDK.

Use your "File Explorer", navigate to "C:\Program Files\Java" to inspect the sub-directories. Take note of your **JDK installed directory**, in particular, the update number {x}, which you will need in the next step.

In the following diagram, the JDK installed directory is "C:\Program Files\Java\jdk-11.0.1", where {x}=1.



I shall refer to the **JDK installed directory** as **<JAVA\_HOME>**, hereafter, in this article.

##### Step 3: Include JDK's "bin" Directory in the PATH

Windows' Command Prompt (CMD) searches the current directory and the directories listed in the PATH environment variable (or system variable) for executable programs. JDK's programs (such as Java compiler "javac.exe" and Java runtime "java.exe") reside in the sub-directory "bin" of the JDK installed directory. You need to include JDK's "bin" in the PATH to run the JDK programs.

To edit the PATH environment variable in Windows 10:

1. Launch "Control Panel" ⇒ (Optional) "System and Security" ⇒ "System" ⇒ Click "Advanced system settings" on the left pane.
2. Switch to "Advanced" tab ⇒ Click "Environment Variables" button.
3. Under "System Variables" (the bottom pane), scroll down to select variable "Path" ⇒ Click "Edit...".
4. **For Newer Windows 10**: You shall see a **TABLE** listing all the existing PATH entries (if not, goto next step). Click "New" ⇒ Click "Browse" and navigate to your JDK's "bin" directory, i.e., "c:\Program Files\Java\jdk-11.0.{x}\**bin**", where {x} is your installation update number ⇒ Select "Move Up" to move this entry all the way to the TOP. Skip the next step.
5. **For Older Windows 10**: **(CAUTION: Read this paragraph 3 times before doing this step! Don't push "Apply" or "OK" until you are 101% sure. There is no UNDO!!!)** (To be SAFE, copy the content of the "Variable value" to Notepad before changing it!!!) In "Variable value" field, APPEND "c:\Program Files\Java\jdk-11.0.{x}\bin" (where {x} is your installation update number) IN FRONT of all the existing directories, followed by a semi-colon (;) to separate the JDK's bin directory from the rest of the existing directories. DO NOT DELETE any existing entries; otherwise, some existing applications may not run.
6. Variable name : **PATH**

Variable value : **c:\Program Files\Java\jdk-11.0.{x}\bin;[do not delete exiting entries...]**

##### Step 4: Verify the JDK Installation

Launch a CMD via one of the following means:

1. Click "Search" button ⇒ Enter "cmd" ⇒ Choose "Command Prompt", or
2. Right-click "Start" button ⇒ run... ⇒ enter "cmd", or
3. Click "Start" button ⇒ Windows System ⇒ Command Prompt

Issue the following commands to verify your JDK installation:

1. Issue "path" command to list the contents of the PATH environment variable. Check to make sure that your JDK's "bin" is listed in the PATH.
2. **path**

PATH=**c:\Program Files\Java\jdk-11.0.{x}\bin**;[other entries...]

1. Issue the following commands to verify that JDK/JRE are properly installed and display their version:
2. // Display the JDK version
3. **javac -version**
4. javac 11.0.1
5. // Display the JRE version
6. **java -version**
7. java version "11.0.1" 2018-10-16 LTS
8. Java(TM) SE Runtime Environment 18.9 (build 11.0.1+13-LTS)

Java HotSpot(TM) 64-Bit Server VM 18.9 (build 11.0.1+13-LTS, mixed mode)

### How to Install JDK on Mac OS X

##### Step 1: Check if JDK has been Pre-Installed

To check if JDK has been installed, open a "Terminal" (Search "Terminal"; or Finder ⇒ Go ⇒ Utilities ⇒ Terminal) and issue this command:

**javac -version**

* If a JDK version number is returned (e.g., JDK x.x.x), then JDK has already been installed. If the JDK version is prior to 1.8, proceed to Step 2 to install the latest JDK; otherwise, proceed to "Step 3: Write a Hello-world Java program".
* If message "command not found" appears, JDK is NOT installed. Proceed to the "Step 2: Install JDK".
* If message "To open javac, you need a Java runtime" appears, select "Install" and follow the instructions to install JDK. Then, proceed to "Step 3: Write a Hello-world Java program".

##### Step 2: Download JDK

1. Goto Java SE download site @ <http://www.oracle.com/technetwork/java/javase/downloads/index.html>.
2. Under "Java Platform, Standard Edition" ⇒ "Java SE 11.0.{x}", where {x} denotes a fast running security-update number ⇒ Click the "Oracle JDK" "Download" button.
3. Under "Java SE Development Kit 11.0.{x}" ⇒ Check "Accept License Agreement".
4. Choose the JDK for your operating platform, i.e., MacOS. Download the DMG installer (e.g, jdk-11.0.{x}\_osx-x64\_bin.**dmg** - about 166MB).

##### Step 3: Install JDK/JRE

1. Double-click the downloaded Disk Image (DMG) file. Follow the screen instructions to install JDK/JRE.
2. Eject the DMG file.
3. To verify your installation, open a "Terminal" and issue these commands.
4. // Display the JDK version
5. **javac -version**
6. javac 11.0.{x}
8. // Display the JRE version
9. **java -version**
10. java version "11.0.{x}"
11. ......
13. // Display the location of Java Compiler
14. **which javac**
15. /usr/bin/javac
17. // Display the location of Java Runtime
18. **which java**

/usr/bin/java

**How to Install Eclipse on Windows**

**Step 0: Install JDK**

To use Eclipse for Java programming, you need to first install Java Development Kit (JDK). Read "How to Install JDK for Windows" given above.

**Step 1: Download**

Download Eclipse from [https://www.eclipse.org/downloads](https://www.eclipse.org/downloads/). Under "Get Eclipse IDE 2018-12" ⇒ Click "Download Packages". For beginners, choose the "**Eclipse IDE for Java Developers**" and "**Windows 64-bit**" (e.g., "eclipse-java-2018-12-R-win32-x86\_64.zip" - about 184MB) ⇒ Download.

**Step 2: Unzip**

To install Eclipse, simply unzip the downloaded file into a directory of your choice (e.g., "c:\myproject").

I prefer the zip version, because there is no need to run any installer. Moreover, you can simply delete the entire Eclipse directory when it is no longer needed (without running any un-installer). You are free to move or rename the directory. You can install (unzip) multiple copies of Eclipse in the same machine.

**How to Install Eclipse on Mac OS X**

To use Eclipse for Java programming, you need to first install JDK. Read "How to install JDK for Mac OS X" given above.

To install Eclipse:

1. Goto <http://www.eclipse.org/downloads/>. Under "Get Eclipse IDE 2018-12" ⇒ Click "Download Packages". For beginners, select "**Eclipse IDE for Java Developers**" and "**Mac Cocoa 64-bit**". You will receive a DMG file (e.g., "eclipse-java-2018-12-R-macosx-cocoa-x86\_64.dmg").
2. Double-click the downloaded Disk Image (DMG) file. Follow the screen instructions to install Eclipse. Eclipse will be installed under "/Applications/eclipse". (To confirm!)