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

It is 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. Goto "Control Panel" ⇒ "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 Java SE download site @ <http://www.oracle.com/technetwork/java/javase/downloads/index.html>.
2. Under "Java Platform, Standard Edition" ⇒ "Java SE 8.0.{x}", where {x} denotes a fast running update number ⇒ Click the JDK's "Download" button.
3. Under "Java SE Development Kit 8.0.{x}" ⇒ Check "Accept License Agreement".
4. Choose the JDK for your operating system, i.e., "Windows" (for 64-bit Windows OS), and download the installer (e.g., "jdk-8.0.{x}\_windows-x64\_bin.exe" - 283MB).

#### **Step 2: Install JDK and JRE**

Run the downloaded installer (e.g., "jdk-8.0.{x}\_windows-x64\_bin.exe"), which installs both the JDK and JRE.

By default:

* JDK is installed in directory "C:\Program Files\Java\jdk-8.0.{x}", where {x} denotes the upgrade number; and
* JRE is installed in "C:\Program Files\Java\jre-8.0.{x}".

Notes: In 64-bit Windows, "Program Files" is meant for 64-bit programs; while "Program Files (x86)" for 32-bit programs.

Accept the defaults and follow the screen instructions to install JDK and JRE.

Use the "File Explorer", goto "C:\Program Files\Java" to inspect these folders. Take note of your **JDK installed directory**, in particular, the varying upgrade number, which you will need in the next step.

In the following diagram, the JDK installed directory is "C:\Program Files\Java\jdk-8.0.1", 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' Shell searches the current directory and the directories listed in the PATH *environment variable* (*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 "bin" in the PATH to run the JDK programs.

To edit the PATH environment variable in Windows 7/8/10:

* Launch "Control Panel" ⇒ (Optional) System and Security ⇒ System ⇒ Click "Advanced system settings" on the left pane.
* Switch to "Advanced" tab ⇒ Push "Environment Variables" button.
* Under "System Variables" (the bottom pane), scroll down to select "Path" ⇒ Click "Edit...".
* **For Windows 10 (newer releases)**:  
  You shall see a **TABLE** listing all the existing PATH entries (if not, goto next step). Click "New" ⇒ Enter the JDK's "bin" directory "c:\Program Files\Java\jdk-8.0.{x}\**bin**" (Replace {x} with your installation number!!!) ⇒ Select "Move Up" to move this entry all the way to the TOP.  
    
  **Prior to newer 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, INSERT "c:\Program Files\Java\jdk-8.0.{x}\bin" (Replace {x} with your installation number!!!) IN FRONT of all the existing directories, followed by a semi-colon (;) which separates 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.

Variable name : PATHVariable value : c:\Program Files\Java\jdk-8.0.{x}\bin;[do not delete exiting entries...]

Notes: Starting from JDK 1.8, the installation created a directory "c:\ProgramData\Oracle\Java\javapath" and added to the PATH. It contains only JRE executables (java.exe, javaw.exe, and javaws.exe), but NOT the JDK executables (e.g., javac.exe).

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

Launch a CMD shell via one of the following means:

* Click "Search" button ⇒ Enter "cmd" ⇒ Choose "Command Prompt", or
* right-click "Start" button ⇒ run... ⇒ enter "cmd", or
* (Prior to Windows 10) click "Start" button ⇒ All Programs ⇒ Accessories (or Windows System) ⇒ Command Prompt, or
* (Windows 10) 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 <JAVA\_HOME>\bin is listed in the PATH.  
   Don't type prompt>, which denotes the command prompt!!! Key in the command (highlighted) only.
   1. // Display the PATH entriesprompt> pathPATH=c:\Program Files\Java\jdk-8.0.{x}\bin;[other entries...]
2. Issue the following commands to verify that JDK/JRE are properly installed and display their version:
   1. // Display the JRE versionprompt> java -versionjava version "1.8.0\_151"Java(TM) SE Runtime Environment (build 1.8.0\_151-b12)Java HotSpot(TM) 64-Bit Server VM (build 25.151-b12, mixed mode)