



# Before You Begin

This section contains information you should review before using this book. Any updates to the information presented here will be posted at:

<http://www.deitel.com/books/jhttp11>

In addition, we provide getting-started videos that demonstrate the instructions in this Before You Begin section.

## Font and Naming Conventions

We use fonts to distinguish between on-screen components (such as menu names and menu items) and Java code or commands. Our convention is to emphasize on-screen components in a sans-serif bold **Helvetica** font (for example, **File** menu) and to emphasize Java code and commands in a sans-serif **Lucida** font (for example, `System.out.println()`).

## Java SE Development Kit (JDK)

The software you'll need for this book is available free for download from the web. Most of the examples were tested with the Java SE Development Kit 8 (also known as JDK 8). The most recent JDK version is available from:

<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

The current version of the JDK at the time of this writing is JDK 8 update 121.

### *Java SE 9*

The Java SE 9-specific features that we discuss in optional sections and chapters require JDK 9. At the time of this writing, JDK 9 was available as an early access version. If you're using this book before the final JDK 9 is released, see the section "Installing and Configuring JDK 9 Early Access Version" later in this Before You Begin. We also discuss in that section how you can manage multiple JDK versions on Windows, macOS and Linux.

## JDK Installation Instructions

After downloading the JDK installer, be sure to carefully follow the installation instructions for your platform at:

[https://docs.oracle.com/javase/8/docs/technotes/guides/install/install\\_overview.html](https://docs.oracle.com/javase/8/docs/technotes/guides/install/install_overview.html)

*You'll need to update the JDK version number in any version-specific instructions.* For example, the instructions refer to `jdk1.8.0`, but the current version at the time of this writing is `jdk1.8.0_121`. If you're a Linux user, your distribution's software package manager

might provide an easier way to install the JDK. For example, you can learn how to install the JDK on Ubuntu here:

<http://askubuntu.com/questions/464755/how-to-install-openjdk-8-on-14-04-lts>

## Setting the PATH Environment Variable

The PATH environment variable on your computer designates which directories the computer searches when looking for applications, such as the applications that enable you to compile and run your Java applications (called `javac` and `java`, respectively). *Carefully follow the installation instructions for Java on your platform to ensure that you set the PATH environment variable correctly.* The steps for setting environment variables differ by operating system. Instructions for various platforms are listed at:

<http://www.java.com/en/download/help/path.xml>

If you do not set the PATH variable correctly on Windows and some Linux installations, when you use the JDK's tools, you'll receive a message like:

'java' is not recognized as an internal or external command,  
operable program or batch file.

In this case, go back to the installation instructions for setting the PATH and recheck your steps. If you've downloaded a newer version of the JDK, you may need to change the name of the JDK's installation directory in the PATH variable.

### JDK Installation Directory and the `bin` Subdirectory

The JDK's installation directory varies by platform. The directories listed below are for Oracle's JDK 8 update 121:

- JDK on Windows:  
C:\Program Files\Java\jdk1.8.0\_121
- macOS (formerly called OS X):  
/Library/Java/JavaVirtualMachines/jdk1.8.0\_121.jdk/Contents/Home
- Ubuntu Linux:  
/usr/lib/jvm/java-8-oracle

Depending on your platform, the JDK installation folder's name might differ if you're using a different JDK 8 update. For Linux, the install location depends on the installer you use and possibly the Linux version as well. We used Ubuntu Linux. The PATH environment variable must point to the JDK installation directory's `bin` subdirectory.

When setting the PATH, be sure to use the proper JDK-installation-directory name for the specific version of the JDK you installed—as newer JDK releases become available, the JDK-installation-directory name changes with a new *update version number*. For example, at the time of this writing, the most recent JDK 8 release was update 121. For this version, the JDK-installation-directory name typically ends with `_121`.

## CLASSPATH Environment Variable

If you attempt to run a Java program and receive a message like

Exception in thread "main" java.lang.NoClassDefFoundError: *YourClass*

then your system has a CLASSPATH environment variable that must be modified. To fix the preceding error, follow the steps in setting the PATH environment variable, to locate the CLASSPATH variable, then edit the variable's value to include the local directory—typically represented as a dot (.). On Windows add

```
.;
```

at the beginning of the CLASSPATH's value (with no spaces before or after these characters). On macOS and Linux, add

```
.:
```

## Setting the JAVA\_HOME Environment Variable

The Java DB database software that you'll use in Chapter 24 and several online chapters requires you to set the JAVA\_HOME environment variable to your JDK's installation directory. The same steps you used to set the PATH may also be used to set other environment variables, such as JAVA\_HOME.

## Java Integrated Development Environments (IDEs)

There are many Java integrated development environments that you can use for Java programming. Because the steps for using them differ, we used only the JDK command-line tools for most of the book's examples. We provide getting-started videos that show how to download, install and use three popular IDEs—NetBeans, Eclipse and IntelliJ IDEA. We use NetBeans in several of the book's online chapters.

### *NetBeans Downloads*

You can download the JDK/NetBeans bundle from:

```
http://www.oracle.com/technetwork/java/javase/downloads/index.html
```

The NetBeans version that's bundled with the JDK is for Java SE development. The online JavaServer Faces (JSF) chapters and web services chapter use the Java Enterprise Edition (Java EE) version of NetBeans, which you can download from:

```
https://netbeans.org/downloads/
```

This version supports both Java SE and Java EE development.

### *Eclipse Downloads*

You can download the Eclipse IDE from:

```
https://eclipse.org/downloads/eclipse-packages/
```

For Java SE development choose the Eclipse IDE for Java Developers. For Java Enterprise Edition (Java EE) development (such as JSF and web services), choose the Eclipse IDE for Java EE Developers—this version supports both Java SE and Java EE development.

### *IntelliJ IDEA Community Edition Downloads*

You can download the free IntelliJ IDEA Community from:

```
https://www.jetbrains.com/idea/download/index.html
```

The free version supports only Java SE development.