Chapter 0, Getting Started

John M. Morrison

May 4, 2018

0 Introduction

In this chapter you will learn how to get Java up and running, and understand how compile a program. This chapter will deal purely with nitty-gritty mechanical matters. Getting these out of the way will pave the path for the more interesting matters awaiting us in Chapter 1.

Let us begin by getting Java running on your machine. You will need to connect your box to the Internet or you will need to write certain materials to a CD or DVD so they may be installed on your box.

1 Getting a Java Development Kit

To build Java programs on your box, you will need a *Java Development Kit*. This piece of software is available for all major computing platforms. We will step through the process for the Windoze, Mac and Linux platforms.

- **Windoze** Go to `http://www.oracle.com/technetwork/java/javase/downloads/index.html`. and you can get the most current JDK. Begin by hitting the "Download JDK" button. You will be asked the platform you are using. Agree to the license agreement and hit Continue. You will need to know if you are running 32 or 64 bit windoze. You will download a file something like `jdk-8u77-windows-586.exe`. This name may vary whether you are using 64 bit or 32 bit Windoze. Most current machines are 64 bit but a few older ones are still 32s. The number after the `jdk-` is version number. This book uses Java 10, so make sure you are using that version.
  You will need to edit your environment variables to get the commands `java` and `javac` onto your path so you can use them in the command-line interface.
  When the download is done, double–click on the download's icon to launch it. A Windoze install shield will come up. Agree to the license agreement and click through the boxes to do the install. When you finish, reboot. Your machine is now fully Java-enabled. The video at `https://www.youtube.com/watch?v=bVjsFFkPgbo` runs about 7 minutes and does a

good job of helping you to get set up. It will also enable `jshell` in your terminal window.

- **Mac** Macs come with the JDK installed. Macs tend to lag on Java versions. You can go to the site referred to for Windoze users and download the latest JDK for the Mac. To enable JShell, you can add this line to your `.bashrc` (create it if you haven't already).

  ```
  alias jshell="/Library/Java/JavaVirtualMachines/jdk-10.0.1.jdk/Contents/Home/bin/jshell
  ```

  You will need to check your version number of java. Here is how to do this.

  ```
  $ javac -version
  javac 10.0.1
  $ java -version
  java version "10.0.1" 2018-04-17
  Java(TM) SE Runtime Environment 18.3 (build 10.0.1+10)
  Java HotSpot(TM) 64-Bit Server VM 18.3 (build 10.0.1+10, mixed mode)
  ```

- **Linux** In Ubuntu, You will need `openjdk` or `sun-javaX-jdk`, where `X` is the version number. You will need to get into the extended repositories for Ubuntu to get the package sun-java8. You should not have to reboot when this process is complete. You can also obtain the binaries from Oracle. All major distributions of Linux will have repositories will also have JDK binaries.

2 Editing Environments

You will need a plain-text editor for creating source code files. Here are some recommended possibilities. All are free software.

- The Atom text editor is available here `http://atom.io`. It has many excellent features and provides syntax coloring for all major programming languages. It works on all platforms.
- Windoze users can download Notepad++ at `https://notepad-plus-plus.org/`. This is an excellent editor.
- Macs come equipped with vi (vim). By defaullt they have no `.vimrc` file. Create this in your home directory and enter this text into it. You can download vim for windize from `https://www.vim.org/download.php`.

  ```
  syntax on
  set et
  set tabstop=4
  set nohlsearch
  set number
  ```

- You can work with an IDE (I don't like these for beginners). NetBeans, IntelliJ, and Eclipse are all solid choices and are freely available.

A Word About Your File System It is a smart idea to create a directory to hold all of your Java projects. Do this in your home directory. If you are using Atom, avoid storing your stuff in the Atom directory tree; the path is long and annoying.

If you are building a DVD Place the JDK installer and the text installers a folder you will later copy to the DVD. Place these on your DVD so you can finalize it and get it ready for your (offline) machine to read. All of these items are freely available for you to use and to share with your friends, colleagues and classmates. It all fits happily on a DVD

If you are going to work offline, you should also download the Java API documentation and install it on your machine. This documentation is a free "Encyclopaedia of Java" that will be extremely helpful.

How do I know it's working? Create this program in a file named `Foo.java`.

```
public class Foo
{
}
```

Now open a terminal window (cmd or PowerShell on windoze). We will use the symbol `$` to represent your system's prompt.

```
javac Foo.java
```

Then, list your files; you should see a file named `Foo.class`. If so, you are golden.

Exercise Take some time to customize your text editor. Here are some suggestions. The `.vimrc` file takes care of some of this if you are a vim user.

1. Change the background color from white to an off-white color such as `0xFFF8E7`. This is much easier on your eyes; staring at a white screen increases eye strain.
2. Adjust the font size to your liking, but do not change from a monospace font. We recommend Courier or Courier new.
3. Have line numbers displayed, since error messages in Java often cite errors by line number.
4. You can have a dark background if you wish.
5. Set your indent level to 4 spaces.

