Getting Set Up with Java

Get your computer set up for COSC 112!

For COSC 112, we will be using the Java programming language. There are two ways you should be able to interact with Java for this course: locally (on your personal computer) and remotely, by logging into the Amherst College servers Romulus and Remus (in case you're interested). Having a local installation of Java is convenient so you can work without an internet connection and without any lag (this is especially helpful if you are not on campus this semester!). However, all of your submitted work will be compiled and run on Romulus and Remus, so I strongly recommend testing your code there before submitting. It is possible that you will have a different version of Java installed on your personal computer, so something that compiles and runs for you may not run on Amherst servers.

You are free to use any text editor or IDE (integrated development environment) you are comfortable with to write your programs. A word of warning though: IDEs such as Eclipse and IntelliJ do a lot of work in the background assuming your program will be run in a certain way. It is likely that you will have to modify settings in order to get your IDE to behave like Remus and Romulus. I am not experienced enough with any IDE to offer technical support in these matters, so I *strongly encourage you to write code with a "basic" text editor and compile by hand.*

There are many good (open source) text editors out there. I use Emacs, and while it has a bit of a learning curve at first, it is powerful enough to do anything you want it to do (albeit possibly requiring a deep dive into documentation). Emacs is freely available for all common operating systems and well-documented, so if you aren't sure what text editor to use, I recommend giving Emacs a try.

Note. If you already have Java installed on your local machine and are comfortable in your programming environment, it may be more trouble than it is worth to re-install Java as described below. However, if you are not using Java SE 8, I strongly recommend testing your code on Romulus and Remus before submitting to make sure there aren't any problems.

Alright. Let's get started.

Installing Java locally

To be consistent with Remus and Romulus, I recommend installing the JDK SE 8 (the Java Developer Kit Standard Edition 8). This version is not the newest version of Java, but it is still widely used and well-supported. You can download JDK SE 8 here. Note that for Windows users, you'll want the "x64" version (unless your computer is older than you are).

Below are instructions to test that your installation worked. First download some code you'd like to compile, such as `HelloGraphics.java` (and remember the location you downloaded it to).

{ } HelloGraphics
Source Code

MacOS

1. Open the Terminal app.

2. Check that the `javac` (compile java) and `java` (run java program) commands are working by entering `javac -version` and `java -version` into the terminal. If something went wrong, you'll get an error `command not found...`, otherwise the terminal will respond by telling you what version of Java you have installed.
3. Navigate to where you downloaded `HelloGraphics.java`. (See this tutorial for navigating in the Terminal app.)
4. Compile your program with `javac HelloGraphics.java`.
5. If you didn't get any errors in step 4, run your program with `java HelloGraphics`. Hopefully, you see a nice welcome message!

Windows

1. Click on the Start menu (the Windows icon in the lower left of the screen), and then type Command Prompt. You will see an icon for this program appear. Right-click on that icon, and then select Run as administrator. When asked for permission, click Yes. When the command prompt appears, enter the following two commands exactly as they appear:

```
setx JAVA_HOME -m "C:\Program Files\Java\jdk1.8.0_261"
setx PATH -m "C:\Program Files\Java\jdk1.8.0_261\bin;%PATH%"
```

2. Each command should yield the message, SUCCESS: Specified value was saved. You should now close this command prompt window.
3. Once again, click on the Start menu, and type Command Prompt. This time, just click on the icon to open the command prompt window. At the prompt, you can try the following command, which should yield the line of output shown, to test if Java is installed and the command prompt correctly configured:

```
javac -version
javac 1.8.0_261
```

1. Navigate to the location you downloaded `HelloGraphics.java`. (See here for help with navigation.)
2. Compile your program with the command `javac HelloGraphics.java`
3. Run your program with `java HelloGraphics`.

Some troubleshooting advice for windows is available here.

Get Emacs

To install emacs, you can use this link for MacOS, or Professor Kaplan's instructions for Windows (go to the Windows section of the page).

You can use your mouse to navigate the menus of Emacs, but one of the things that makes Emacs great is its use of keyboard shortcuts for everything. Here is a tutorial to help you with the basics.
Now you can use Emacs for all of your text editing needs!

Using Remus and Romulus

Instructions can be found on the Computing Resources page. This tutorial gives the basics of navigating Unix-like operating systems from the command line. To compile and run Java programs, use, for example, `javac HelloGraphics.java` and `java HelloGraphics`. You can edit a file in Emacs using `emacs HelloGraphics.java`.