Java and the Mac OS Big Sur Terminal

This document instructs you on how to use the Mac OS Big Sur Terminal with Java.

Java

You will use the Java compiler `javac` to compile your Java programs and the Java interpreter `java` to run them. To verify that Apple's implementation of Java 2 Standard Edition (Java SE 6) is already installed:

- Run Software Update.
- Run `Applications/Utilities/Java/Java  Preferences` and verify that the *Java SE 6 - 64-bit* entry is checked and first in the list; if not, drag to change the preferred order.

Command-line interface

You will type commands in an application called the *Terminal*.

- Open a terminal window. You can find this under *Go -> Applications -> Utilities*. Drag the Terminal to your dock since you will be using it frequently.
- You should now have a Terminal window somewhere on the screen. It will have a prompt that looks something like:

  ```
  yalongwu@MacBook-Pro ~ %
  ```

- To check that you are running the right version of Java, type the commands in boldface below. You should see something similar to the information printed below.

  ```
  yalongwu@MacBook-Pro ~ % java -version
  ```

  java version "15.0.2" 2021-01-19
  Java(TM) SE Runtime Environment (build 15.0.2+7-27)
  Java HotSpot(TM) 64-Bit Server VM (build 15.0.2+7-27, mixed mode, sharing)

  Then type

  ```
  yalongwu@MacBook-Pro ~ % javac -version
  ```

  javac 15.0.2

- Since you will be using the Terminal frequently, you may want to customize the default window settings.

Compile the program

You will use the `javac` command to convert your Java program into a form more amenable for execution on a computer.

- From the Terminal, navigate to the directory containing your `.java` files, say `yalongwu@MacBook-Pro ~ %/introcs/hello`, by typing the `cd` command below.

  ```
  yalongwu@MacBook-Pro ~ % cd introcs/hello
  yalongwu@MacBook-Pro hello %
  ```

- Assuming the file, say `HelloWorld.java` is in the current working directory, type the `javac` command below to compile it.

  ```
  yalongwu@MacBook-Pro hello % javac HelloWorld.java
  yalongwu@MacBook-Pro hello %
  ```

  If everything went well, you should see no error messages.

Execute the program

You will use the java command to execute your program.

- From the Terminal, type the `java` command below.

  ```
  yalongwu@MacBook-Pro hello % java HelloWorld
  Hello, World
  ```

  If all goes well, you should see the output of the program - Hello, World.

Input and Output

If your program gets stuck in an infinite loop, type `Ctrl-c` to break out.

If you are entering input from the keyboard, you can signify to your program that there is no more data by typing `Ctrl-d` for `EOF` (end of file). You should type this character on its own line.

Troubleshooting

When I try to run `java` I get: `Exception in thread "main" java.lang.NoClassDefFoundError`. First, be sure that `HelloWorld.class` is in the current directory. Be sure to type `java HelloWorld` without a trailing `.class` or `.java`. If this was not your problem, it is possible that your `CLASSPATH` was set by some other program so that it no longer includes the current working directory. Try running your program with the command line

`yalongwu@MacBook-Pro hello %` **`java -cp ./ HelloWorld`**

If this works, your classpath is set incorrectly.

How do I get the menu to display at the top of the screen instead of at the top of the frame? Execute with `java -Dapple.laf.useScreenMenuBar=true`