Homework 0

1 Introduction

This assignment gets you started with the basic tools you will need to complete all of your homework projects. This project will

- ensure that you have correctly installed the Java SDK (Software Development Kit),
- give you practice using a text editor to write Java programs,
- give you practice compiling and running Java programs,
- show you a bit of command line fun, and
- introduce you to Checkstyle.

2 Problem Description

You are a CS 1331 student who needs to install the Java SDK, configure it for command line use, and learn how to use a programmer's text editor to create and edit Java source code.

3 Solution Description

1. Download and install the Java SDK on your computer using the instructions on `http://www.cc.gatech.edu/~simpkins/teaching/gatech/cs1331/guides/install-java.html`
2. Download and install a programmer's text editor. You may end up trying out several over the course of the semester before you settle on one. See `http://www.cc.gatech.edu/~simpkins/teaching/gatech/cs1331/guides/text-editors.html`
3. Create a directory for your CS 1331 coursework somewhere on your hard disk. We suggest `cs1331`. Note: avoid putting spaces in file and directory names, since doing so complicates the use of some command line tools.

4. Create a `hw0` subdirectory of your CS 1331 coursework directory for your HW0 solution.

   On Unix/BASH you can create both of these directories at once with

   ```
   $ mkdir -p cs1331/hw0
   ```

   Note: the `$` is the command prompt (would be something like `C:\>` on Windows), the text after it is what you enter..

5. On the command line, go to the `hw0` directory you just created and enter these commands:

   ```
   $ javac -version 2> hw0-output.txt
   $ java -version 2>> hw0-output.txt
   ```

   `>` redirects the output of a program. `2>` redirects `stderr`, which is used for diagnostics (such as version strings). The first line creates the `hw0-output.txt` file, and the second line (with the extra `>`) adds to the file. `http://www.jstorimer.com/blogs/workingwithcode/7766119-when-to-use-stderr-instead-of-stdout` has a nice discussion of the file descriptors `stdin`, `stdout` and `stderr`.

6. Open your text editor and create a file in your newly created `hw0` directory named `NimblyBimbly.java` and enter the following Java program:

   ```
   public class NimblyBimbly {

      public static void main(String[] args) {
         for (int i = 0; i < 9; i++) {
            System.out.print("\u004D\u0065\u006F\u0077 ");
         }
         System.out.println("...");
         System.out.println("\u004D\u0065\u006F\u0077\u0021");
      }
   }
   ```

7. On the command line, go to the directory containing your newly created `NimblyBimbly.java` file and enter `javac NimblyBimbly.java`. Do a directory listing; you should see a file called `NimblyBimbly.class` that contains the compiled bytecode of your `NimblyBimbly` program. These commands should look like this:

   ```
   $ javac NimblyBimbly.java
   $ ls # the Windows equivalent of ls is dir
   NimblyBimbly.class NimblyBimbly.java hw0-output.txt
   ```

8. Now enter `java NimblyBimbly` to run the program and see its output on the command line.

9. Add the output of your program to `hw0-output.txt` by running `java NimblyBimbly >> hw0-output.txt`.

4 Checkstyle

Review the CS 1331 Code Concentions and download the Checkstyle Jar file and the CS 1331 Checkstyle configuration file (`cs1331-checkstyle.xml`) to the directory that contains your Java source files. Run Checkstyle on your code like this (in the directory containing all your Java source files):

```
$ java -jar checkstyle-5.6-all.jar -c cs1331-checkstyle.xml *.java
Starting audit...
Audit done.
```

The message above means there were no Checkstyle errors. You can easily count Checkstyle errors by piping the output of Checkstyle through `wc -l` and subtracting 2 for the two non-error lines printed above (which is how we will deduct points). For example:

```
$ java -jar checkstyle-5.6-all.jar -c cs1331-checkstyle.xml *.java | wc -l
      2
```

> Food for thought: is there a one-liner like above that shows you only the number of errors? Hint: `man grep`.

In future homework projects we will run Checkstyle on all the Java source files you submit and deduct one point from your score for each style error found by Checkstyle.

5 Turn-in Procedure

Submit your `hw0-output.txt` file on T-Square as an attachment. Do not submit any compiled bytecode (`.class` files), the Checkstyle jar file, or the `cs1331-checkstyle.xml` file. When you're ready, double-check that you have submitted and not just saved a draft.

6 Verify the Success of Your Submission to T-Square

Practice safe submission! Verify that your HW files were truly submitted correctly, the upload was successful, and that the files compile and run. It is solely your responsibility to turn in your homework and practice this safe submission safeguard.

1. After uploading the files to T-Square you should receive an email from T-Square listing the names of the files that were uploaded and received. If you do not get the confirmation email almost immediately, something is wrong with your HW submission and/or your email. Even receiving the email does not guarantee that you turned in exactly what you intended.

2. After submitting the files to T-Square, return to the Assignment menu option and this homework. It should show the submitted files.

3. Download copies of your submitted files from the T-Square Assignment page placing them in a new folder.

4. Recompile and test those exact files.

5. This helps guard against a few things.

   (a) It helps insure that you turn in the correct files.

   (b) It helps you realize if you omit a file or files.[1] (If you do discover that you omitted a file, submit all of your files again, not just the missing one.)

   (c) Helps find last minute causes of files not compiling and/or running.

[1] Missing files will not be given any credit, and non-compiling homework solutions will receive few to zero points. Also recall that late homework will not be accepted regardless of excuse. Treat the due date with respect. The real due date is midnight Friday. Do not wait until the last minute!