### CS 203 HW 1: Fortune Teller Spring 2012

**Due Date:** Wednesday, Jan 25 at 11 AM. Your code file (.java file) and report should be submitted electronically to Moodle.

In this first assignment, you will create a custom fortune program that asks the user for a variety of information. Using that information, your program should print a custom fortune for the user.   
  
This assignment should introduce you to Java, getting input (scanning/printing), arithmetic, variables, and printing text to the screen.  
  
**Specification**

* The user should be greeted and prompted to enter their first name. You may assume the user enters valid data for all prompts (we will see later in the course how to check for invalid input)
* The program should ask for the user’s height in inches (68.3 is a valid height).
* The program should ask for and store the year the user was born.
* The program should ask at least three other questions of your choice (please keep the program G-rated). At least one question should prompt the user to enter a word/phrase and this word/phrase should appear in the printed fortune.
* The program should calculate a "lucky number" given the inputs the program gathers. The calculation should involve at least *three* different arithmetic operators (+, -, /, \*, %).
* The program should calculate the person’s height in meters. One inch is equal to 0.0254 meters.
* The user should then see the customized fortune and the calculated lucky number.
* After the fortune is presented, the program should thank the user (using the user's name) before terminating.

**Example Interaction**  
The following is the printout from an example fortune generator. You do **\*not\*** need to follow this formatting exactly. Part of the fun of computer science is designing programs, designing functionality, and designing the interactions with users. ***Please use a fortune other than the one shown below.***   
  
Welcome to the wacky fortune generator program.  
Enter you name: Hal  
What is your height in inches? 68.3  
What year were you born? 1986  
What is your mood today (happy, blue, anxious)? happy  
Do you own a dog (enter 1 for yes and 0 for no)? 0

What is your hometown? Boulder, Colorado  
Did it rain today (enter 1 for yes and 0 for no)? 0  
  
Your fortune:  
Today your lucky number is 41. Did you know that you are 1.735 meters tall? Be advised that you will experience something surprising today that will make you happy. You may not experience wealth in material goods, but your friendships will abound. You will soon hear from someone in Boulder, Colorado. The lack of rain today indicates a sunny outlook.  
  
Thank you, Hal, for using this program.  
  
**Additional Enrichment**  
If you have time, feel free to add the following components to your program. Please document the additional features in your code and your written summary.

* Ask for month, day, and year birth date to customize the fortune for the astrological sign. (Read ahead about conditionals)
* Add some simple error-checking with regard to the input. We all know that month 14 does not exist and height -50 does not make sense, so your program could instead print an error message instead of a fortune. After printing the error message, your program could then re-prompt the user to enter another number. (You will probably need to read about branching and looping statements in chapters 3 and 4.)
* Create a repository of more than one fortune. After greeting the user, ask the user for a fortune number he/she would like to use or randomly select the fortune from the repository. (You will probably need to read chapters 3 and 4 in the textbook.)

**Logistics**

1. Please download the starter BlueJ project asst1.zip located on Moodle. The starter file indicates where you should write code for your program. Remember to include comments to remind yourself and your reader the functionality of the different parts of your program. Please keep the name of the file "Fortune.java" for testing purposes.
2. You can read input from the keyboard using keyboard.nextLine(), keyboard.nextDouble() and keyboard.nextInt().
3. Be careful when using keyboard.nextLine() after keyboard.nextInt() – the keyboard.nextLine() method will just read the newline character typed after the integer, so you may need to use 2 keyboard.nextLine() statements in succession.
4. Remember that there is a difference between integer division and division using doubles.
5. When you are finished and ready to submit:
   1. Create a folder called username\_HW1.
      1. (For example, Tammy’s would be vandegri\_HW1.)
   2. Copy your Fortune.java file into this folder.
   3. Copy your FortuneSummary.docx file into this folder.
   4. Zip the folder by right-clicking and Send To->Compressed Folder (on Windows). There should also be a zip utility on Mac.
6. **What to turn in:** Please submit your **username\_HW1.zip** file to Moodle before the due date and time. After logging into the portal, navigate to CS203. You will find a link to submit this file. You do not need to print anything for homework submissions in this course.

**Grading Guidelines (total of 20 points)**

Your program will be graded on a scale from 0 to 7 in two separate categories:

* Code Quality: Design, commenting, evidence of testing, whitespace, readability
* Code Operation: Does code do what is listed in the specification?

Your summary report will be graded on a scale from 0 to 6 based on:

* Correct use of technical vocabulary
* Clarity and completeness
* Formatting (use template for report)
* Testing completeness and testing strategy

#### Report Guidelines and Format – use the template provided

**1. Introduction and System Use:** Describe how to use your program from a user's perspective. What is the purpose of the program? What should the user expect to see and type? You may assume the user is familiar with using BlueJ to run Java programs.

**2. System Description:** Describe the internals (the code you wrote) and its structure. What are the important lines of your program? (You may refer to the appendix containing your code or copy/paste some of the key code snippets here.) How does the program proceed in execution? You may assume the reader is another student taking CS 203.

**3. Testing and Evaluation:** Describe how you tested and evaluated your program. If your program does not meet the specifications, please note these differences. Include a representative printout from executing your program. List the different user inputs that you tried.

Evaluate the quality of your code: Is it readable and easy to follow? Do the parts make sense? Are your comments helpful?   
  
**4. Reflection:** Describe the most challenging aspect(s) of this program and what you learned from completing it. How much time did you spend in total on this homework assignment (including the report)?

**Appendix**: Copy and paste your java code here (use Courier New font so the characters line up correctly)  
  
Please keep your reports concise (no more than 2 pages - not including the appendix). A high quality computer scientist can explain their code, their process, and their testing to their colleagues and bosses. When writing the report, your audience is someone else taking CS 203. I ask you to do these reports because you will be expected to explain your ideas, whether or not you become a computer scientist. The technical report should include headings and labeled figures/tables (if appropriate).