Programming Techniques COSC1284/2010

Tutorial 2

Agenda

- Housekeeping
  - PT Canvas
  - Setup your laptop for Visual Studio Code
- Tutorial/Lab
  - Read chapter 3 from the textbook
  - Discuss the concepts with your tutor and fellow classmates
  - Complete chapter 1 - Exercises 1 - 3
  - Complete chapter 2 - Exercises 1 - 3

Variables

- A variable is a named location in memory that stores a value.
- Values may be numbers, text, images, sounds, and other types of data.
- Whole numbers in Java are represented by byte, short, int and long.
    a. Using int is recommended.
- Decimal numbers in Java are represented by float and double.
    a. Using double is recommended.
- A variable that represents a true/false value is known as a boolean.
- A variable that represents a word/sentence/message/paragraph is known as a String.
    a. Note: that the String type starts with capital ‘S’ where other types are written in lowercase, more to come on that.

Exercise 2.1

- Find a partner and play “Stump the Chump”:
- Start with a program that compiles and runs correctly. One player looks away while the other player adds an error to the program. Then the first player tries to find and fix the error. You get two points if you find the error without compiling the program, one point if you find it using the compiler, and your opponent gets a point if you don’t find it.

Exercise 2.2

- The point of this exercise is (1) to use string concatenation to display values with different types (int and String), and (2) to practice developing programs gradually by adding a few statements at a time.

Exercise 2.2 (cont.)

1. Create a new program named Date.java. Copy or type in something like the hello world program and make sure you can compile and run it.
2. Following the example in Section 2.4, write a program that creates variables named day, date, month, and year. The variable day will contain the day of the week (like Friday), and date will contain the day of the month (like the 13th). Assign values to those variables that represent today's date.
3. Display the value of each variable on a line by itself. This is an intermediate step that is useful for checking that everything is working so far. Compile and run your program before moving on.
4. Modify the program so that it displays the date in standard American format, for example: Thursday, July 16, 2015.
5. Modify the program so it also displays the date in European format. The final output should be: Thursday 16 July 2015

Exercise 2.3

1. Create a new program called Time.java. From now on, we won't remind you to start with a small, working program, but you should.
2. Following the example program in Section 2.4, create variables named hour, minute, and second. Assign values that are roughly the current time. Use a 24-hour clock so that at 2pm the value of hour is 14.
3. Make the program calculate and display the number of seconds since midnight.
4. Calculate and display the number of seconds remaining in the day.
5. Calculate and display the percentage of the day that has passed. You might run into problems when computing percentages with integers, so consider using floating-point.
6. Change the values of hour, minute, and second to reflect the current time. Then write code to compute the elapsed time since you started working on this exercise.

What’s a way to validated exercise 2.3?

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Change time to 12:00:00 (12 pm) and does the percentage equal 50%?