Study guide, Homework 1 quiz

Recall that following each assignment, there will be a quiz on it that's **worth as much as the assignment submission.** (See the web pages for my section.) Therefore, when you have submitted the assignment, you still have some work to do to lock in your credit.

The key to getting an easy A on this quiz will be to be able to write working code for each method we had you work on. You have to do this on paper, without the benefit of the computer to try it out. You have to have developed the fluency to do it quickly.

One key to being able to do this is to understand visually or conceptually how the algorithms work, not to memorize code. Another key is to have enough practice at writing out Java code that you find the syntax to be second-nature, just as you find the grammar of a language you speak fluently to be second-nature. It's similar to learning an instrument; you have to develop an academic understanding, and you also have to practice.

I will choose a subset of methods to test you on. For each method, I will ask you to reproduce the entire method, including the header, where you name the method, tell the types of the returned value, and give the types of the parameters. You must then put in the required parentheses, and then fill in the body of the method, as you did on the homework.

You may find that the posted solutions are simpler than your own. To prepare for the quiz, download the posted solutions, compile them, and get them to run. Keep an intact copy to refer to.

For each method, look at the code for the method, and develop a conceptual picture of how it works. Draw an example of the problem and be sure you understand the idea behind the algorithm by being able to illustrate its steps on your picture. Ask yourself what parameters it needs and what it needs to return. The answer to this is a matter of common sense, not memorizing.

Then see if you can translate this mental picture back into Java code. Delete the entire method, and then try to create working code from your mental picture of the algorithm, without peeking at your safe copy. If you prefer your strategy to the one in the posted solution, use yours, but understand the posted solution before you decide.

What you reproduce will rarely be identical to the original code, because you are re-expressing the algorithm in "your own words" in Java. Make notes of syntax and logic errors you make, however, since these are pitfalls to watch out for when you take the quiz.

After you have done this for some of the exercises, see if you can do it again some hours later without peeking at the solution. Ideally, you want to get to the point where you can get it to compile and run on your first try.

Finally, be aware that, unfortunately, we must have you take the quiz on paper, rather than on the computer. This sometimes throws people off because you can't rely on some of the help that Eclipse gives you in completing a phrase. Do a dry run where you delete each method, write your solution on paper, and then copy your paper solution back in. See if it still compiles and works.