Problem Set 6

Due by 23:59:59:99999 EDT, Friday , April 25, 2008.

Please use good programming style, i.e. liberally comment your code, use meaningful variable names, etc., and be sure to include your name in every file. Include a readme file if you think its needed. Please submit answers involving programming electronically to the Academics volume of fileserver1. Written problems may be submitted electronically or handwritten. Please leave space between problems for my comments.

Problem 1. [5 points each] Book problems 10.8, 10.12, 10.13.

Problem 4. [10 points] Book problem 10.19. Explain your answer using a sequence of diagrams showing the corresponding VMT for the object variable `a`.

Problem 5. [15 points] Book problem 10.20. Explain your answer using a sequence of diagrams showing the corresponding VMT for object `a` and objects pointed to by `ap`.

Problem 6. [10 points] Book problem 10.41.

Problem 7. [40 points] Investigate the JTable class which is one of the Java Swing GUI components. You can find tutorials for it at:
`http://java.sun.com/docs/books/tutorial/uiswing/components/index.html`.
Although the tutorials are for Java 6, I was able to run several of the examples after commenting out a single line in Java 1.5 (Java 2 Platform SE 5.0),the version installed on most of the lab machines.

Write several paragraphs describing your understanding of the object oriented design of JTable. Discuss the various related classes, interfaces, and other object-oriented mechanisms that JTable utilizes and how they contribute to realizing its functional goals. Aim your discussion at someone else in the class who knows Java and object-oriented ideas and wants to understand JTable but may not know much about Swing. Try to convey how it all works from an OO perspective. The question is intentionally broad and open and will be graded on coherence, organization, and originality as well as correctness.

Feel free to include code snippets in your explanation to help demonstrate your point. You are encouraged, but not required to come up with one or more examples of your own that demonstrate various JTable capabilities. Don't just parrot the tutorial code, but of course you can use it as a starting point. The more you try experiment with JTable, the better you'll understand it and be able to explain it to someone else. Here are two ideas for experimentation. The first idea is to try to display in a JTable the results of the previous problem, together with the object's fields and methods. The second idea is to try to create a subclass of JTable that takes an array of Rectangles as the parameter to its constructor. The table has four columns, one for each of a Rectangle's four data values (x, y, width, height). Each row of the table corresponds to a different rectangle. Someone could use the table to edit the data values and then extract out of the modified table the array of Rectangles with their newly updated values.