Midterm Review Sheet

This test will consist of 10 questions that are similar in many ways to the questions that you have had on the quizzes. There is also an extra credit question. You will have the full class period to complete the test. Generally I try to lay out tests so they will have 4 short answer questions, 3 coding questions, and 3 tracing questions. The test can include any material that we have covered in class so far. Below is a list of the general topics we have covered and some of the main points that I might expect you to know about them. You will be able to reference the API during the exam, but that is the only resource you can use.

Object-Orientation
- Encapsulation.
- Separation of interface from implementation.
- Know what objects are and why we consider them useful.
- Know what you should do in code to use this model more effectively.

Classes
- You need to understand the basics of class based OOPLs.
- What is the function of a class? How does it differ from an object?
- Know what the different types of inner classes are and what they do.

Java Basics
- Understand the basic syntax and semantics of Java. You will have to write some code.
- Know how Java classes are laid out and the different things that you can put into them.
- Know the differences between primitives and objects.
- Understand the Java syntax, including method invocation.

Inheritance in Java
- What is inheritance? What roles can it play in a language?
- Why do we use inheritance?
- What are Interfaces in Java? How are they different from classes?
- Be able to describe the limitations on inheritance in Java.

Polymorphism
- How is polymorphism achieved in Java?
- What details of the language make this very usable in Java?
- Be able to write code that uses polymorphism or trace code that uses it.

Generics
- Know how generics work in Java and when they are used.
- Be able to write code that uses generics or trace code that uses it.

String Processing
- Understand the Java String class and how to use it. This includes the fact that it is immutable.

Arrays
- Understand Java array objects and how to use them.
- Know what you need to do to create and use single and multidimensional arrays.
- Know how to sort the values in an array as well as how to search for values in arrays.

Threads
- You should understand what threads are.
- Know the pitfalls of multithreaded code and how to get around them in Java.
- Be able to write code that would spawn a thread.

Stacks and Queues
- Understand the ADTs for stacks and queues.
- What if LIFO and what if FIFO? Which is what a stack does? What about a queue?
- Know how to implement both of these using arrays.

Linked Lists
- Understand what a linked list is.
- Be able to draw pictures showing basic manipulations on linked lists.
- Be able to write the code for the basic methods of a linked list.
- Understand the concepts of circular and doubly linked lists as well as sentinels.

GUIs
- You need to be able to write simple code that sets up a GUI.