CSC 360 Midterm 1 study guide
Tentative date for Midterm 1: Friday, September 19

This will be a closed-note, closed-book, in-class exam. You will write your answers on paper (non-electronic exam). The exam will be 50 minutes long. The exam will consist of writing code, examining code and describing what it does, what it will output, what is wrong with the code, or how to make changes to the given code, and questions on concepts.

The exam covers the following material/chapters.

Chapter 8
Given UML, be able to write the class that matches the UML. Understand the components of a class (instance data, constructor, accessor methods, mutator methods). Know the four visibility modifiers, which you should use in different contexts and visibility of an item given a specific modifier (e.g., if a method is protected, where is that method accessible?) Now what a no-arg constructor is and why you should define one (this corresponds to chapter 11). Know the difference between how a primitive variable and a reference variable function especially with respect to parameter passing. Know the difference between the run-time stack and the heap. Know what **null** means in Java. Know how to declare an array of objects and the need to instantiate each array element separately. No questions will be asked about **static** or the Java compiler.

Chapter 10
Know what is meant by information hiding and encapsulation. Know what an immutable object is. Be able to determine the scope of a variable given code. Know what **this** means in Java and how to use it in a constructor. Know what the wrapper types are and how to use **Integer** and **Double**. Know how to use the **BigInteger** and **BigDecimal** classes. No questions will be asked about the differences between OOP and procedural programming or the design characters of a class (e.g., cohesion, consistency).

Chapter 11
Know what a parent class is and a child class and how to write a child class. Know what is inherited from a parent to child class. Know how to implement a child's constructors and how to override inherited methods. Know the difference between overloading and overriding methods. Be able to define an **equals** method. Know what polymorphism is and what classes a variable can take on when declared. Know what dynamic binding means. Know what implicit and downcasting are and be able to use downcasting. Know how to use **instanceof**. Be able to use the ArrayList class and know its methods **add**, **clear**, **contains**, **get**, **remove**, **size**, **set**. Know the four visibility modifiers and the use of the word **final**.

Chapter 20
Know what recursion is and how to write and trace through recursive code. Know what infinite recursion is and the role of the base case(s). Be able to write recursive code as it pertains to String operations as covered in the chapter's power point notes. Understand how the recursive solutions to binary search, searching a maze, Fibonacci, Towers of Hanoi, and the water jugs problem all work.