Test 1 will be Thursday, Feb. 25, in class. It will be closed book and notes, except for one 8.5" x
11" sheet of paper (front and back) with notes. Review topics for Test 1 are:

**Chapter 13. Introduction to Classes**
- Procedural vs. Object-oriented programming
- class definition, access specifiers (private, public), inline functions, constructors, destructor
- creating objects/instances of a class
- pointers to objects and usage of (\rightarrow) to reference class member functions
- arrays of objects
- creating an Abstract Data Type (ADT) array class (IntegerList class)

**Chapter 14. More about Classes**
- static vs. instance variables
- operator=, deep vs. shallow copies, copy constructor
- operator overloading, this pointer
- friend function: operators: \ll and \gg
- object conversion
- aggregation - a class contains an instance of another class

**Chapter 15. Inheritance, Polymorphism, and Virtual Functions (mostly skip)**
- General idea of inheritance

**NOT IN THE TEXT - algorithm analysis (lecture notes 4 and 5)**
- General mathematical idea of asymptotic complexity functions: big-oh, omega, theta
- Complexity classes: constant time $\Theta(1)$, logarithmic $\Theta(\log n)$, $\Theta(n \log n)$, quadratic $\Theta(n^2)$,
  higher polynomials, exponential $\Theta(2^n)$, and factorial $\Theta(n!)$,
- Algorithm analysis to get worst-case and best-case theta notation (or big-oh) of small
  programs like the simple sorts

**Chapter 16. Exceptions, Templates, and STL**
- throwing exceptions, try-catch syntax and semantics
- exception classes
- function templates
- class templates
- Standard Template Library (STL) container classes: vector, deque, list, set, multiset, map,
  multimap
- STL iterators and their usage
- STL algorithms