

## CSE 143 Midterm 2 Topic List – Feb. 17, 2005

Here is a brief checklist of the additional topics that have been covered since the first midterm and might appear on Monday's exam. You remain responsible for everything earlier in the course, but the second midterm will have somewhat more emphasis on newer topics. You do not need to memorize details of classes like streams and `String` – brief reference information will be included in the test if it is needed to answer questions.

- Programming by contract
  - Preconditions, postconditions, invariants (particularly class invariants)
  - Throwing exceptions – `throw` statement and exception objects; using standard exceptions to signal errors (`NullPointerException`, etc.)
  - `assert` statement
  - Appropriate use of `throw` vs `assert` – when is it appropriate to use each
- Exception handling
  - What happens when an exception is thrown
  - Use of `try-catch` to handle exceptions; order of `catch` clauses
  - Checked vs unchecked exceptions
  - `throws` clause in method headings – when needed; what it means
- Streams
  - Stream model – Java's basic organization of I/O
  - Basic stream classes
  - Opening and closing streams
  - Files and their relationship to streams; basic use of `JFileChooser`
  - Be able to write code to open files and read/write them using `BufferedReader` and `PrintWriter` streams
- Collections – particularly the Java collection classes
  - Key collection interfaces (`Collection`, `List`, `Set`, `Map`) and implementations (`ArrayList`, `HashMap`, etc.)
  - Iterators and how to use them
- Simple implementation of lists using arrays
  - Simple array list – use of dynamic allocation to expand the capacity
  - Class invariants for a list; size vs capacity; using arrays, subscripts, etc.
  - Companion iterator implementations and how they are related to the associated containers
- Key ideas behind linked lists – how to construct a linked list, find things in it, etc.
- Anything related to project 2, including files and streams, basic string operations like `indexOf`, `substring`, using `HashMaps`, etc.