CS 2420 Midterm Study Guide

I have tried to create a comprehensive but short list. There might be questions from the chapters that don’t appear here, so the book and lectures or your notes from those lectures are also things to study.

The Midterm Covers Chapters 1-5

The Question types are True/False, Multiple Choice, and Short Answer

* Boolean Logic with && and ||
* Pass By Value vs Pass By Reference
* Method Overloading
* Pre and post increment (++a++)
* Primitive Types
* Arrays
* ArrayLists
* Exception Handling Code
* Finally Blocks in Exception Handling Code
* String concatenation vs character addition
* Scanner methods
* Information Hiding
* Important methods in the Object class
* Static
* interfaces
* Abstract classes
* Abstract methods
* Concrete classes
* Final classes
* Final Methods
* Composition
* Calling a generic method from the main
* Big Oh notation
* Equivalent Big Oh functions
* Looking at a method and determining the runtime
* Binary
* Binary growth
* Some math given runtime and size of input for algorithms. (like, if it runs this fast, in this much time, how much time if the input is doubled)
* Growth rates
* Ordered Triples proof with Blue and Red balls
* Unluck Joe in a new scenario

Here is what I wrote down as I went through the chapter

* Chapter 1
  + Boolean logic with || &&
  + Understanding method calls / pass by value / reference
  + Method / Constructor Overloading
  + Pre/post increment ++a--
  + Order of Operations
  + Short circuit logic (true || ??)
  + Loops
* Chapter 2
  + Reading input from the command line
  + Strings
  + Arrays
  + Default variable values
  + Exception handling
  + ArrayList – something on this one for sure!
* Chapter 3
  + Constructors
  + Inheritance
  + Methods
  + Public, private, protected
  + Information hiding
  + Static
  + Scope
  + The main methods inherited from Object
* Chapter 4
  + Polymorphism
  + Abstract classes and methods
  + Interface
  + Generic programming
  + Nested classes
* Chapter 5
  + Growth rates of algorithms
  + The ability to judge an algorithm and determine the Big-Oh running time
  + Some basic math, like if an algorithm is linear and it takes 100 ms for 100 items, how log would it take for 200 items?
  + The ability to determines the Big-Oh for problems written similarly to
    - log (N) + N\*N\*N+N\*N+N+1 + log(N)
  + Worst/best/average case times for
    - Binary search
    - Interpolation search
    - Sequential search

**Programming Study Guide**

This is just a very broad overview that lists things you should have learned in 2420 that will be on the programming portion of the test, with a little more specifics just so you are prepared. I assume I don’t need to list everything from 1400 and 1410 you should know.

* Be able to work with comparable
* Be able to work with generics
* Be able to read in data from a file
  + Into an object (constructor)
  + Into an array
* Be able to work with arrays
* Be able to talk about the runtime of your code in terms of Big Oh