Final Exam Topics: (see Handout 9 for Midterm topics, less emphasis on these but still included)

1. Efficient Sorting Algorithms
   - Merge Sort (Review: Class 14, HW 6)
   - Quick Sort (Review: Class 19, Handout 13, HW 9)
   - Heap Sort (Review: Class 20, Lab 9)
   - Radix Sort (*not included on exam*)
2. Recursion
   - Examples: binary search, merge sort, quick sort, DFT, tree traversals, JDragon
   - Review: Class 14-15, Handout 10 & 11, Labs 7 & 11
   - Know how to write, interpret, and analyze recursive functions
3. Trees
   - Tree terminology, traversals, and applications
   - Review: Class 16-17, Handout 11, Lab 7, HW 7
4. Hash Tables
   - Uses and runtime of hash maps and hash sets; hash functions
   - Review: Class 18, Handout 12, Lab 8, HW 8
5. Heaps
   - Review: Class 20, Lab 9
6. Graphs
   - Definitions and terminology
   - Graph traversals: BFT, DFT
   - Graph algorithms: Shortest path (Dijkstra), Havel-Hakimi, BFS, DFS
   - Network Flow (*not included on exam*)
   - Review: Class 21-25, Handout 14, Lab 10, Project
7. Themes
   - Runtime (time complexity) analysis
   - Code design, including generics, protection of fields (data encapsulation), etc
   - Implementation of data structures and algorithms in Java
   - Object-oriented design, object instantiation, argument passing
   - Relationship between data structures: some are built on others, some are subsets of others