Cs2851 Final Exam Study Guide

Fundamental data structures
- Arrays, array lists, linked lists, queues, stacks, binary trees, binary search trees, balanced binary search trees, sets and maps (Tree Maps/Sets, Hash Maps/Sets).
- Given an application scenario, be able to select the appropriate data structure and justify your selection, e.g., time complexity for how you are going to use the data structure.
- Given an interface to a data structure implement data structure methods.

Data-structure understanding
- Time complexity, structure, storage, and application scenario, i.e., given an application scenario define the correct data structure and understand why.
- Know how to extend functionality of a given class data structure.
- Given a business requirement, understand how to use Java collection

Tree traversal
- Recursive traversal.
- Binary search

Recursion, iteration
- Write a recursive procedure for a given data structure and application need.
- Convert a give recursive procedure, convert to iterative procedure

Binary Trees
- Binary tree, binary search tree, balanced binary search tree.
- Understand definitions and be able to differentiate different binary trees based on these definitions.
- Perform search, insert, delete, update on elements within a binary tree.
- Balancing and rotation. Be able to state whether a given tree is balance. Given an AVL tree perform rotation (left or right) about a node.

Computational time complexity
- Given a method, determine computational time complexity

Note: cheat sheet (all sides) allowed. Close laptop, closed book, closed notes.