

## CSC 221    Final Exam Topics    Fall 2016

1. Measuring Algorithm Complexity
  - (a) Big “O”
  - (b) Little “o”
  - (c) Big “ $\Theta$ ”
  - (d) Analyzing iterative code, e.g., nested loops
  - (e) Time complexity for operations on data structures
2. Binary Search Trees
  - (a) Breadth-First Traversal
  - (b) Operations: **search**, **insert**, and **delete**
3. AVL Trees
  - (a) Properties that define an AVL tree
  - (b) Balancing a tree after an insert or a delete operation
4. 2-3 Trees
  - (a) Properties that define a 2-3 tree
  - (b) Insert in a 2-3 tree
5. Abstract data type – what is it ?
6. Hash Tables
  - (a) Hash functions
  - (b) Hash tables
  - (c) Resolving collisions
    - i. Chaining
    - ii. Open addressing
      - A. Linear probing
      - B. Pseudo-random probing
      - C. Double hashing
7. Searching a collection of records by multiple keys
8. Graphs
  - (a) Data structures representing graphs
  - (b) Depth first search
  - (c) Pre- and post- numbering
  - (d) Topological sort
9. One big-picture question. Short essay on how to use data structures effectively in a “real-world” problem/application.