

Study guide for CS165 second midterm exam

1) Review Topics

- a. Basic Programming
- b. Classes versus Objects
- c. Object Instantiation
- d. Abstract Classes and Interfaces
- e. Recursion
- f. Inheritance
- g. Polymorphism
- h. Dynamic binding
- i. Generics

2) Data Structures

- a. Collections hierarchy
- b. List interface
- c. Queue interface
- d. Stack interface
- e. ArrayList class
- f. LinkedList class
- g. Comparable interface
- h. Iterable and Iterators
- i. ArrayList implementation of Stack/Queue
- j. LinkedList implementation of Stack/Queue
- k. Array implementation of Stack/Queue
- l. Circular implementation of queue of Queue
- m. Infix, Prefix, Postfix Expression
- n. Postfix Expression Evaluation using Stack

3) Priority Queues, Heaps

- a. Offer/add
- b. Complete binary tree
- c. Array storage
- d. maxHeap, minHeap
 - Insert/delete
 - HeapSort

4) Grammars, Expressions

- a. Grammars / Production Rules
- b. Regular Expressions

5) Trees

- a. Binary Trees
- b. Binary Search Trees (BST)
 - Searching
 - Inserting / Delete
 - Inorder, Preorder, Postorder, LevelOrder Traversal
- c. B+ trees
 - Searching
 - Insert
 - Delete
 - Rotation
 - Bulk Loading