Brief Review for Exam 1

Subjects covered:

– Asymptotic analysis
  • Best/Worst/Average performance (time and space)
  • Big-O notation and properties
    – Lower order terms, sum, product
    – Loop, consecutive statements, conditional statements
  • Growth rates of commonly used formulas
    – L’Hospital’s rule

– ADT and template class/functions
  • What are template classes, why need them, how they differ from regular classes

– Lists
  • Basic operations and their time performance
  • Linked list implementation (single, double, circular)
  • Basic idea of Stacks and queues and their operations

– Trees
  • Rooted trees
    – Tree height, node depth and height, path length
  • Binary tree (BT)
    – Full, perfect, and complete BT
    – Internal and external nodes, IPL, EPL
    – Different orders of traversals
  • Binary search tree (BST)
    – Basic operations and their time performance (find, findMin, findMax, insert, remove, makeEmpty)

Types of questions:

– Similar to those on the review pages
– Definitions
– Proofs (especially inductions)
– Coding (some may require using operations already defined in the class)
– Applying operations to specific example problems