**CS 310 Exam Two Study Guide**

Last Modified: 6 March 2022

You should know or be able to do:

* the operations of a priority queue
* various implementations of a PQ: sorted array, unsorted linked list, etc.
* the heap data structure and its operations
* how a heap can be implemented on a vector
* use substitution to solve a recurrence relation of the appropriate form, and the analysis of an algorithm so described
* how binary search works, and its analysis
* use the master theorem to find the analysis of appropriate recurrence relations
* count the number of operations of recursive algorithms, and apply the master theorem to their analysis
* understand and be able to trace the operation of heapsort, quicksort, shellsort, countsort, and distributionsort
* the efficiency classes of the major sorting algorithms
* how open-chain static hashing works
* some example hash functions for keys of various data types
* how find, insert, and delete work in a normal binary search tree
* how insert works in an AVL tree, including the operation of its rotations
* how find, insert, and delete work in a splay tree, including the operation of its splay rotations
* the LaTeX we have used to date, including the align\* environment to properly format a multi-step derivation, drawing a 2-d array using the tabular environment, and using the Verbatim environment with line numbers to show multi-line code fragments