Final Exam Information

Date: 5/1/2018
Time: 1 PM – 3:50 PM
Room: CB2 – 207

The questions will vary from short answer, to tracing, to perhaps a bit of coding.

Since there's a lot to remember algorithm wise, I'll allow you to use five 8.5"x11" sheets of notes, front and back.

Final Exam Review Outline

I. Backtracking

II. Use of Java Data Structures, Java Features
    a. ArrayList, LinkedList, ArrayDeque
    b. TreeSet, TreeMap
    c. HashSet, HashMap
    d. PriorityQueue
    e. Custom Sorting

III. Data Structures
    a. Disjoint Sets
    b. 2-4 Trees
    c. Red-Black Trees
    d. Skip Lists

IV. Sorting
    a. Quick Sort Average Case Analysis
    b. Lower Bound for Adjacent Element Swap Sorts
    c. Lower Bound for Comparison Sorts
    d. Bucket Sort
    e. Radix Score

V. Graphs
    a. Definition & Different Types
    b. Depth First Search
    c. Breadth First Search
    d. Topological Sort
    e. Network Flow

VI. Greedy Algorithms
    a. Fractional Knapsack
    b. Single Room Scheduling
    c. Multiple Room Scheduling
    d. Change
    e. Kruskal's
    f. Prim's
    g. Dijkstra's
    h. Huffman Coding

VII. Divide and Conquer
    a. Integer Multiplication
    b. Tromino "Tiling"
    c. LCS

VIII. Dynamic Programming

    a. Change Problem
    b. Floyd-Warshall's Algorithm and path reconstruction
    c. Longest Common Subsequence
    d. 0-1 Knapsack Problem
    e. Matrix Chain Multiplication
    f. Edit Distance

  IX. Guest Lecturer

    Note: To encourage attendance I may end up asking some questions based on what the guest lecturer, Dr. Rickard Ewetz, covers in class. I will base these questions on what he gives me, notes wise.