Welcome to Data Structures and Algorithms! Problem List

Revision Date: January 10, 2013

100P Policies

The set of 100P policies, including the grading scheme, can be found here: policies.html.

Please read the policies throughly!

Qualifying Exam

To enroll in the 100P section of Data Structures and Algorithms (CS260), you must first pass the qualifying exam. You are allowed multiple attempts and you must succeed by the last day to add classes. Until you pass the exam, you must attend the regular classroom section.

Here is the set of qualifying exam questions: inv-1.pdf. The actual exam will consist of a randomly selected subset of questions. A selected question may be tweaked slightly from how it appears in this set.

Exam dates will be emailed to you. The last exam will be given on the last day to add a class.

Concept Exam

In addition to completing a significant portion of the problem set, you must score a 90% or better on a *concept exam* in order to pass CS260. You are allowed multiple attempts.

Here is the set of qualifying exam questions: inv-ds.pdf. The actual exam will consist of a randomly selected subset of questions. As with the qualifying exam, a selected question may be tweaked slightly from how it appears in the posted set.

Your last attempt at the concept exam must occur by the final exam date of the regular sections of CS360.

Problem Set

Here are the problems and readings for the class. Make sure you understand the readings before attempting a problem and demonstrating your solution. The suggested readings are only a start; you should continue your education by reading other materials.

Problem 1: $O(n \log n)$ quicksort
Problem Description

Problem 2: Red-Black trees
Problem Description

Problem 3: Proofs
Problem Description

Problem 4: Dynamic programming
Problem Description

Problem 5: Square root data structure
Problem Description

Problem 6: Fibonacci Heaps
Problem Description

Problem 7: Minimum Spanning Tree
Problem Description

Problem 8: NP-completeness
An introduction to *P*, *NP*, and *NP*-completeness
Problem Description

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