Introduction to Computer Science (100P version) Problem Set

Revision Date: January 10, 2013

Printable Version

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 An Introduction to Computer Science (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-0.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-1.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 CS260.

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: Arrays and Order Notation

Readings

- An introduction to Order Notation
- An introduction to ADTs and Public Interfaces
- Arrays
- Fillable Arrays
- Circular Arrays
- Dynamic Arrays
- Dynamic Circular Arrays
- Wikipedia's take on Dynamic Arrays

Tasks

- order notation
- arrays

Problem 2: Stacks and Queue

Readings

- Nodes
- Singly-Linked Lists
- Doubly-Linked Lists
- Stacks
- Queues
- Priority Queues
- Wikipedia's take on Linked Lists
- Wikipedia's take on Stacks
- Wikipedia's take on Queues
- Wikipedia's take on Priority Queues

Tasks

- stacks
- queues

Problem 3: Searching

Read up on the following subjects:

- linear search
- binary search
- scientific plots

Task: searching

Problem 4: Sorting

Readings

- selection sort
- insertion sort
- mergesort
- quicksort

Task: sorting

Problem 6: Binary Search Trees

Readings

- Binary Trees
- Binary Search Trees

Task: Search Trees and Rotations

Problem 7: Heaps and Heap Sorting

Readings: Heaps

Task: Heaps as Arrays and Trees

Appointments

You may sign up for demonstrations at the following pages:

http://beastie.cs.ua.edu/cgi-bin/appointments.cgi?100P-lusth

Also, please send an email reminder to the faculty member the day before your demo.

lusth@cs.ua.edu