CSCI 3650
Final Exam Information
Spring 2020

Take Home Exam

Posted at 11:00 A.M. on Monday April 27.
Due at 11:00 P.M. on Friday May 1.
Ethics policy specified on the exam. Use PDF format, submitted via Blackboard assignment.

Timed Online Blackboard Exam

EXAM TIME: Monday May 4
--- can be started beginning at 9:00 A.M.
--- must be completed by 6:00 P.M.
--- time limit is 1.5 hours (adjusted for students with DSS accommodation letters)

I will be available in my office (252-328-9687) from 9:30 A.M. until Noon for phone calls. Will check email sporadically during the afternoon for clarification questions.

Preparation: while you will be allowed to use the same class resources as for the take home portion of the final exam, you need to prepare as if it were a closed-book and closed-note exam except you should prepare up to two pages of handwritten notes. If you do not study and simply try to "learn on the fly" as you take the exam, you will not finish in the allowed time.

The exam will be comprehensive and similar in nature to the quizzes given during the semester. During the semester we have explored a variety of topics in our attempt to achieve the course goals described in the syllabus. The major themes have been the following.

Fundamentals of Algorithm Analysis

- Quantitative and qualitative aspects of asymptotic behavior of functions for expressing time and space costs of algorithms (e.g., $T(n) = O(g(n))$, $T(n) = \Omega(g(n))$, and $T(n) = \theta(g(n))$
- Basic time cost analysis of several array processing algorithms.
- Time cost analysis involving recurrences and basic techniques for solving recurrences.
- Mathematical fundamentals relating to summations and logarithms.
- Basic techniques for determining correctness.
- Theory of NP Completeness.

Algorithm Development Techniques (description, examples, appropriateness, and application)

- Divide and Conquer
- Dynamic Programming
- Greedy Algorithms

Sorting Algorithms: (Insertion Sort, Mergesort, and QuickSort)

- Algorithm specification and time and space cost analysis
- Lower bound on all comparison based sort algorithms

Graph Algorithms and Representation

- Adjacency Lists and Adjacency Matrix representation
- Breadth and Depth-First Search
- Topological Sort
- Minimum Spanning Trees (Kruskal and Prim)
- Dijkstra Shortest Path's Algorithm