

CS 200 Final Exam Preparation Guide

Exam Date: **Thursday, May 10 2012**

Location & Time: Eng 120, **11:50AM ~ 1:50PM**

In this exam, you will have a mix of multiple-choice questions, some short answer questions and some questions that require you to read Java code and perform algebraic calculations. You should attempt the examples and exercises at the end of indicated textbook sections/chapters. Many of the exam questions will have a similar form. Also review the in-class quizzes.

Check List

1. Lecture Note and textbook
2. Written Assignment #5,6
4. Quizzes #6, 7
5. Worksheet for Final Exam.
6. Examples in the text

Key concepts

The problems in this exam will be about the concepts covered in the lectures (week 11 through week 16). Please review your lecture notes (<http://www.cs.colostate.edu/~cs200/Spring12/Schedule.html>)

Heaps and Heapsort

Lecture Notes: part 7 Heaps and Heapsort

Text: Chapter 12 (Prichard)

1. What is a heap?
2. How to insert and delete items?
3. Array representations of heap.
4. What is the difference between heap and binary tree?
5. Heapsort algorithm and efficiency

Hashing

Lecture Notes: part 8. Hashing

Text: section 13-2 (Prichard)

1. Why do we need hashing?
2. What are linear, and the quadratic probing?
3. What is chaining?

Relations

Lecture Notes: part 9. Relations

Text: section 8-1 ~ 8-3 (6th Ed. Rosen)

Revisit the problems in the written assignment #3.

1. Binary relations
2. Reflexive relations, Transitive relations, and Symmetric/antisymmetric relations
3. Combining relations
4. The powers of a relation R
5. Representation of the relations

Graphs

Lecture Notes: part 10. Graphs

Text: Chapter 14(Prichard) Section 9-1 ~ 9-6 (6th Ed. Rosen)

Solve the problems in the worksheet

1. Know the terminologies of a graph such as vertex, edge, degree, directed graph, undirected graph, loop, subgraph, path, and cycle.
2. The handshaking theorem
3. Graph representation
4. Graph implementation
5. Graph traversal algorithms. Know both DFS and BFS algorithms.
6. Connectedness of graphs. What is a strongly connected graph? What is a weakly connected graph?
7. What is a planar graph?
8. Topological sorting algorithms
9. Know the Minimum spanning tree algorithm
10. Know the Shortest path algorithm
11. What is an Euler path, and circuits? Know how to find them.
12. What is a Hamiltonian circuit? Know how to find them.
13. Know the Graph Coloring problem.
14. Know the Planar Graphs and Euler's Formula.