COMP 282 - Advanced Data Structures (Fall, 2018)

Professor: Adam Clark (adam.clark@csun.edu)

Section: 16819

Lectures: JD2221, We 1900-2145

Book: Data Abstraction and Problem Solving with Java (J. Prichard & F. Carrano)

Office Hours: JD3338 We 1745-1845

Prerequisites: COMP 182/L, MATH 150A

Objectives

Throughout this course, the student will become familiar with data structures and algorithms used to efficiently manage large volumes of information. In particular, the student will become comfortable implementing and using hash tables and trees. Sorting and searching of large volumes of information will also be discussed, as well as their representation in persistent memory structures, such as indexed files. Finally, the student will be introduced to formalized systems for data storage: databases.

Schedule

Wednesday	**Deadlines**	
August 29		Class Introduction, Data Structures Review
September 5		Balance and Tree Rotations
September 12		AVL Trees, 2-3-4 Trees
September 19		Red-Black Trees
September 26	Project 1	Introduction to Graphs
October 3		Searching Graphs (BFS and DFS)
October 10		Shortest Path, MST, and Review
October 17	Midterm 1	Introduction to Hashing
October 24		Hashing and Hash Tables
October 31		Hashing Algorithms, Table Collision
November 7	Project 2	Files, Data Access, and Review
November 14	Midterm 2	Introduction to Databases
November 21		Data Design, Keys, and Normal Forms
November 28		Introduction to SQL
December 5	Project 3	Comprehensive Review
December 12	Final	

Grading

Projects: 30% (3 Projects each worth 10%)

Midterms: 30% (2 Midterms each worth 15%)

Final: 40% (Comprehensive)

Projects will give the student a chance to practice the concepts introduced during lecture. The student is expected to turn in a project that will be testable via an automated process. The professor will provide a framework within which the student must complete the assigned task. If a project is turned in that does not follow instructions sufficiently to allow for automated testing, that project will receive no credit.

Midterms are not comprehensive, however the final will be comprehensive. It should be noted, however, that the final will place more emphasis on material covered since the last midterm. Some time during lecture prior to each exam will be devoted to a review of material covered on the exam. In the case of the final, the entire lecture period will be devoted to a comprehensive review of the course material. The student is expected to come to these review sessions with any questions they would like covered, there will be no

structured review material.

Score	Grade
90 - 100	A
80 - 89	B
70 - 79	C
60 - 69	D
0 - 59	F

Academic Dishonesty

According to CSUN academic policies:

> The maintenance of academic integrity and quality education is the responsibility of each student within this University and the CSU system. Cheating or plagiarism in connection with an academic program at a CSU campus is listed in Section 41301, Title 5, California Code of Regulations as an offense for which a student may be expelled, suspended or given a less severe disciplinary sanction. Academic dishonesty is an especially serious offense and diminishes the quality of scholarship and defrauds those who depend on the integrity of the University's programs.

All instances of academic dishonesty will be reported to the office of student affairs. In addition, the offending assignment or exam will at minimum receive no credit towards a final grade. In most cases, the student will simply receive a failing grade for the course. If you are unsure as to what constitutes academic dishonesty, please see the instructor for clarification.

Attendance

Students are expected to attend lectures. While there is no credit given for attendance, students who miss a session are expected to learn the material on their own. Office hours are a student's primary opportunity to ask questions about course materials and receive help with projects.