CS 310
Data Structures
Spring 2019

Dr. David Nordstrom
email: dnordstr_AT_gmu_DOT_edu
office: 5323 Nguyen Engineering Bldg.
office hours: Monday and Wednesday 1:30 - 2:30 and by appointment.

Textbook

The text is Mark Allen Weiss, *Data Structures & Problem Using Java*, 4th ed., Addison Wesley, 2010.

Exams

Midterm exam: Wednesday, March 7, in regular class time
Final exam: Monday, May 13, 10:30 - 1:15

The course

The prerequisite for this course is C or better in CS 211. I will assume that you have developed a significant degree of skill in programming (program organization, coding, documenting, testing and debugging) -- you will develop yet more this semester. I will also assume that you are able to build abstract data types using Java classes.

The purpose of the course is two-fold. We will continue the study of data structures from CS 211 and we will learn how to approach larger and more challenging programming projects than those you did in CS 211. Programming is a significant part of this course and you should expect to spend a good deal of time on the course projects.

Topics

Topics to be covered include:

- Generic types
- Linked lists

- Stacks and queues
- Binary trees
- Balanced binary trees
- Multi-way trees
- B-trees and B+-trees
- File organization
- Searching and sorting
- Set representations
- Hashing

This list is subject to change as interest evolves.

Course outcomes

The students will:

- Reinforce what they have learned about elementary data structures from CS 211
- Extend their knowledge of data structures to more sophisticated data structures. This includes balanced binary search trees, B-trees and B+-trees, hashing, and basic graphs.
- Use generic types in their data structures.
- Do more demanding programming than they had in CS 211. All programming is done in Java. This involves more program design and debugging techniques.

Programs

There will be several programming assignments. Programming assignments will be posted on the course website.

You may discuss the programming projects with other students (this is encouraged) but you must do and submit your own work. *No joint work will be accepted.* Read the CS Department honor code: https://cs.gmu.edu/resources/honor-code/ and the University honor code: https://catalog.gmu.edu/policies/honor-code-system/. You are bound by these honor codes. Any submitted work which shows too much commonality with others' work to be completely original, or any plagiarized work, will receive a grade of 0. Any code which is presented in class or provided to you as part of the project may be included in your programs.

You can only turn in a program *once*. No revisions or additions can be made to your program after it has been submitted. Late programs will be accepted with a 10 points per day late penalty. You are responsible for keeping backups of your work ("my disk crashed" and "my roommate ate my program" are *not* reasons for late submissions).

Grading

There will be a midterm exam and a final. There will be no makeups on exams except under exceptional circumstances (as judged by me), and any such makeup *must* be arranged in advanced. Grades will computed from a weighted average computed with the following weights:

- programs: 35%
- midterm exam: 30%
- final exam: 35%