

CPMA 532 - Data Structures

Spring 2006

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Office Hours: M 1:00 pm - 2:00 pm, WTh 3:00 pm - 4:00 pm

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Text: *Java Structures: Data Structures in Java for the Principled Programmer, 2nd Edition* by Duane A. Bailey

Recommended Text: [*The Java\(TM\) Tutorial, Third Edition*](#) by Mary Campione, Kathy Walrath, and Alison Huml

The most up-to-date version of book is available online at Sun at <http://java.sun.com/docs/books/tutorial/index.html>. A local copy can be found at <http://www.mathcs.duq.edu/simon/Java/index.html>. Please note the copyright message on that page. Also, please do not print out large segments of the text. Instead, if you prefer a printed edition, a book has been published by Addison-Wesley.

Recommended Documentation: <http://java.sun.com/j2se/1.5.0/docs/api/index.html>. This is the documentation for Sun's Java Development Kit (JDK) and is a very handy reference guide to the API.

Course Objectives: We will learn about the basic data structures useful for algorithm design: vectors, matrices, lists, trees, sets, queues, stacks, priority queues, and graphs. In addition, we will develop the basic tools of the designer - asymptotic analysis, structured object-oriented design, the proper use of interfaces, and documentation standards including pre- and post-conditions. Emphasis will be placed on the notions of abstraction, encapsulation, and specification.

Students will deepen their understanding of programming methodology - creating a toolbox of methods that can be used in program design and knowing the right tool for the right job. The distinction between use and implementation will be stressed, allowing the student to create new classes that can be re-used in various contexts. The students will also strength their design, debugging, and documentation skills.

Attendance at classes is highly recommended, but not mandatory. Students should be prepared to discuss their readings in class.

Grading: Assignments 75%
Final 25%

There will be five programming assignments, not necessarily of equal weight. Each assignment is due at the beginning of class, starting with the second class. You will have two weeks to complete the last assignment.

The final will be a written examination consisting of short answer questions and programming tasks problems. Outside sources other than the book may not be used on the final. The final will be given on the

last day of class.

Grading Scale:

100-90 = A, 89-80 = B, 79-70 = C, 69-60 = D, below 60 = F.

Plus/minus grading will **not** be used.

Honor Policy: Students in this class fall under the mandate of the College of Liberal Arts plagiarism policy. Any student guilty of plagiarism will receive a grade of ``F" for the course and will be reported to the Student Committee. Work done in this course is to be by the individual, not by a group. **You may not share (copy, give, show) your homework with other students in the course.**

Late assignments: Assignments are due at the beginning of class. Late assignments will lose 10% per day that they are late. Weekends count as one day.

Students with Disabilities: Students with documented disabilities are entitled to reasonable accommodations if needed. If you need accommodations, please contact the Office of Freshman Development and Special Student Services in 309 Duquesne Union (412-396-6657) as soon as possible. Accommodations will not be granted retrospectively.

Tentative Schedule:

| | Date | Topic(s) | Required Readings |
|--------|-------------|---------------------------------|--------------------------|
| Week 1 | 1/12 | Introduction | Chapter 0-4 |
| Week 2 | 1/19 | Sorting | Chapter 5 |
| Week 3 | 1/26 | Iterators, Lists | Chapters 6-8 |
| Week 4 | 2/2 | Stacks, Queues, Priority Queues | Chapters 9,12.1-12.3 |
| Week 5 | 2/9 | Trees | Chapters 10,11,12.4-12.7 |
| Week 6 | 2/16 | Databases | Chapters 13,14 |
| Week 7 | 2/23 | Graphs, Final | Chapter 15 |

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