95-771: Data Structures and Algorithms for Information Processing
Spring 2015

Course Information
Instructors
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Teaching Assistant
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Teaching Assistant
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Teaching Assistant
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TA Hours: 9 to 11 on both Tuesday and Thursday at A020A.

95-771 is a one-semester, 12-unit course which covers the fundamental data structures and algorithms for information processing. The course uses the Java programming language to illustrate the concepts covered; students are expected to code their assignments in Java. Students enrolled in the course must have a prior background in programming (course work or practical experience). Students with an adequate grasp of programming should have little difficulty learning the Java constructs required to do their assignments.

It should be noted that this is not a Java programming course. With the exception of some initial background information, the course does not focus on the Java language itself, and students who have not studied Java are responsible for acquiring any additional required skills outside of class. Students without adequate programming preparation should consider taking an additional programming course as a pre-requisite or co-requisite to this course.
Evaluation

Five or six programming projects 50% (equally weighted, no collaboration)
Each project will normally consist of several programming activities.
Midterm 25% (Closed book)
Final 25% (Closed book and comprehensive)

Late Assignments

Each student may turn in one assignment one week late with no penalty.
Any other late work will be penalized 10% per day.

Grading Scale

97.5 - 100 A+
92.5 - 97.4 A
90.0 - 92.4 A-
87.5 - 89.9 B+
82.5 - 87.4 B
80.0 - 82.4 B-
etc.

Policy on collaboration

Collaboration is not permitted. While it is fine to discuss projects with others, it is a cheating violation when code is copied or shared. If a student is caught sharing his or her work with another, a failing grade will be assigned to that student for the course. Likewise, if a student uses another person's work and submits it as his or her own, a failing grade will be assigned for the course. Any case of suspected cheating will be brought to the Dean’s attention. At that point, the policies of the Heinz College on cheating will be followed.

When/Where

M. W. 10:30-11:50 A.M. HBH 1001

Required Textbook

Michael Main, *Data Structures & Other Objects Using Java*
Fourth Edition

Optional Textbook

Corman, et al., *Introduction to Algorithms*
Policy On Electronic Devices

Please turn off all electronic devices during class. This includes laptops. Even note taking on a laptop may be a distraction to others. You may ask for individual exemptions from this rule.

Learning Objectives

At the completion of this course the student will be able to:

1. Design or select an appropriate algorithm for a particular problem.
2. Design or select an appropriate data structures for a particular problem.
3. Write programs that make good use of stacks, queues, linked lists, trees, graphs, and hash tables.
4. Analyze the runtime performance of algorithms in terms of Big O, Big Omega, and Big Theta notation.
5. Understand worse case, best case, average case and amortized analysis.
6. Understand the distinction between algorithm correctness and performance.
7. Understand the theory of NP-completeness.
8. Differentiate between problems that are computable and those that are not.

Prerequisites

95-712 Object-oriented Programming in Java or permission of the instructor.

Last Updated January, 2015. Maintained by mm6@andrew.cmu.edu.