
CMSC 341

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(substituting for Nilanjan Banerjee)

Course Website

Instructor site: www.csee.umbc.edu/~nilanb/teaching/341/

Central portal: www.cs.umbc.edu/courses/undergraduate/341

- Instructors office hours (Instructor site)
- Piazza discussion forum (Instructor site)
- TA names and office hours (Central Site)
 - TAs grade projects
- Syllabus (Central site)
- Class schedule including project, homework and exam dates (Central site)
- Grading (Central site)
- Lecture slides (Instructor site)
- Projects (Central site)

Student Honor Code

UMBC Student Honor Code

By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC's scholarly community in which everyone's academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and they are wrong. Academic misconduct could result in disciplinary action that may include, ***but is not limited to***, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, or the UMBC Policies section of the UMBC Directory.

<http://www.umbc.edu/provost/integrity/index.html>

Textbook

- Data Structures and Algorithm Analysis in Java, 3/E
- **Mark Allen Weiss**, *Florida International University*

- ISBN-13: 9780132576277
- Publisher: Addison-Wesley
- Copyright: 2012

- Textbook website - source code and errata page
<http://users.cis.fiu.edu/~weiss/ - dsaajava2>

Prerequisites

- CMSC 202 – Object Oriented Programming
 - Class design
 - Method overloading and overriding
 - Generic container classes
 - In-depth understanding of the Java language, debuggers, and the eclipse IDE
- CMSC 203
 - Proof by induction
 - Permutations and combinations

Lecture style (Nilanjan Banerjee)

- Example oriented.
 - Example code using eclipse
 - Example of utility of data structures
- Discussion oriented
 - Most lectures would have some problem solving exercise
 - Feel free to chime in if you have questions.
 - Continue discussion on the piazza forum.

Grade distribution

- 100 points total
 - Homework: 10 points
 - Exams (midterm+final) = 45 points
 - Projects (programming assgn) = 40 points
 - In-class participation, discussions = 5 points

Topics to be covered

- Linear data structure: list, stacks, queues
- Trees (BST, RB trees, B-Trees, priority queue)
- Hashing
- Graphs, disjoint sets
- Threads (concurrent data structures)

Data Structure

- What is a “data structure”?
- How are they implemented?

Abstract Data Type

- What is an ADT?

Why do we need Data structures

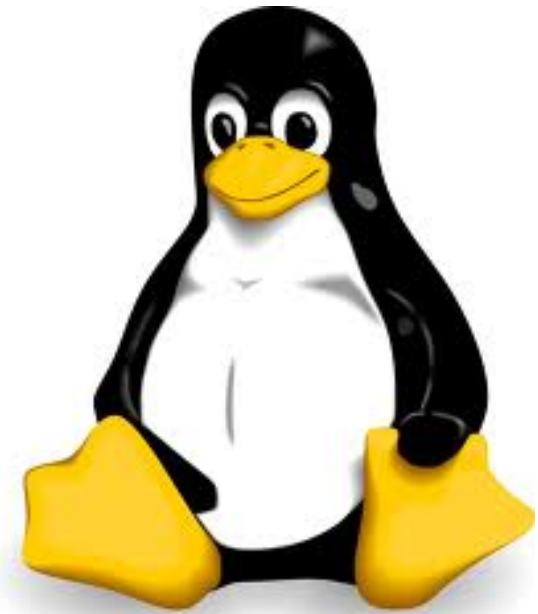
- Efficiency of almost any application is a function of the user of appropriate and efficient data structures



Social networking portals



Search engines



Operating systems

Why Java?

- Java contains a Collections framework that consists of system classes that emulate many of the data structures that you will learn about in this course.
- Easier to program in Java than C++
- Popular industry standard
- More similar to C# than C++
- Platform Independent
- Easy to do GUI Programming

Course Tools -- Eclipse

- If you wish to develop your project on your laptop or PC, we recommend the use of the Eclipse IDE.
- The current version of Eclipse is called “juno”. The download can be found [here](#).
- Prior to downloading Eclipse, be sure you have installed the JavaSE JDK. The current version is Java 7 which can be downloaded [here](#).
- Check out the course [course resource page](#) for help with Eclipse.

Course Tools - submission

- Simpler approach than last year's submission
 - Open source
 - Easy to install and use
 - Simple command line client and GUI based tool (TortoiseSVN)
 - Wide integration in a lot of development tools
- For good introduction on version control and svn
 - <http://svnbook.red-bean.com/en/1.7/svn-book.pdf>

Course Tools - Ant

- Ant is a Java based tool for automating the build (compile, test) process
- Implemented using Java
 - Platform independent commands (works on Windows, Mac & Unix)
- XML based format
- Easily extendable using Java classes
- Ant is an open source (free) Apache project