Outline for Today

Course Administration
Overview of Course
A (very basic) Java overview (to be continued)
Me

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Background:

Teaching Professor
Assistant Dean for Outreach
CS Academic Advisor (classes of '18 and '20)

office hours:
M 1:30 – 4:30; F 11 – 1 (starting next week!)
call me ????
Our Teaching Assistant

- Darien Weems (dweems)
- office hours coming soon
You

• mostly IS students

• let’s find out who’s who (and see how badly I can pronounce your names…)
Prerequisites

• Formally:
  – 15-112

• Practically:
  – laptop or desktop computer
  – some basic programming skills
  – the Java JDK (not the JRE!) and an editor (or IDE)
    • Dr. Java (only runs Java 6 on Mac)
    • Eclipse Standard
    • Sublime
Course content

An Introduction to Data Structures (ways to organize and store data to perform desired operations efficiently). Involves:

- creating/understanding algorithms
- analyzing algorithms (time/space efficiency)
- different data structures will provide different access/update mechanisms and present performance tradeoffs
- working with larger programs/data (efficiency matters when operating at the scale of Google or iTunes)
Abstract Data Types vs. Data Structures

- **Abstract Data Types**
  - formal description of the behavior (semantics) of a data type
  - Ones we will examine in this course include: List, Stack, Queue, Priority Queue, Tree, Heap, Set, Map, Graph

- **Data Structures**
  - a concrete representation/organization of data
  - Ones we will use in this course include: classes, arrays, arraylists, linked lists (and other linked structures), hash tables

- **Two parts**
  - conceptual information about various ADTs
  - ADT implementation tradeoffs using various data structures
Course logistics

• Course website:
  – www.cs.cmu.edu/~mjs/121

• Lectures
  – Come on time; use of electronic devices is prohibited during lecture (you’re here to learn Data Structures, not surf the web or talk to your friends – do that on your time)

• Handin
  – via Box; links will be sent as assignments are posted
Course elements

• Lectures (notes/code posted to website after class)
• Quizzes (8 @ 1.5% each) = 12%
• Programs (7 @ 7% each) = 49%
• Midterm & Final Exam (14/25% each) = 39%
About the Homework & Quizzes

• Eight quizzes [expected]
  – Given in class on Wednesday; returned Thursday

• Seven homework assignments (programs) [expected]
  – due Mondays at midnight

• Late homework
  – Everyone has problems…
  – no late homework will be accepted.
Collaboration Policy

There are no group assignments in this class
Everyone should read and abide by:
http://www.cmu.edu/policies/documents/AcademicIntegrity.htm

Here is some additional information for this course:

– You are allowed to talk with/work with other students on homework assignments
  • You can share ideas
  • You can discuss things at a high (algorithmic, non-code) level (pictures)
  • You should not share (or even look at) code!

– You must turn in your own work
  • Your solution should be different than others
  • The harder the assignment, the more differences we should see
  • You should NEVER copy another student’s file as a basis for your solution. You should not let your files be copied by others!

– If you need help debugging, who do you ask?
Outline for Today

Course Administration

Overview of Course

A (very basic) intro to Java and
Data Structures (topics)

- Intro, Java, Object-Oriented programming
- Arrays & ArrayLists, Linked Lists
- Recursion (I), Efficiency, O-notation
- Inheritance, Interfaces, Iterators, Stacks & Queues
- Searching & Sorting, Trees, BSTs, Recursion (II)
- Priority Queues, Heaps, Sets & Maps
- Hashing, Graphs, Review & Final Exam
Outline for Today

✓ Course Administration
✓ Overview of Course
→ A (basic) Java overview
   → and away we go…
   → error messages aren’t always as useful as they could be!
→ your job is to get Java on your machine and compile/run a simple program like this one…