CS200 Fall 2014
Data Structures and Algorithms

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“scientia est potentia”
(knowledge is power)
Sir Francis Bacon or Thomas Hobbes

“I think a nerd is a person who uses the telephone to talk to other people about telephones. And a computer nerd therefore is somebody who uses a computer in order to use a computer.” Douglas Adams

CS200 structure

- Quizzes & Class Participation: “are you with us?”
- Tests: “what have you learned?”
- Programming assignments: “can you implement it?”
- Written assignments: “do you understand the underlying theory?”
Class meetings

- Lectures
  - Concepts, programming assignment introduction, quizzes (most), tests.
  - Feedback requested each week:
    - List 3 topics that were clear, List 3 topics that were unclear
- Recitation
  - Help with programming and written assignments, practice skills, reinforce/supplement material from lecture, a few programming quizzes.
  - Credit for attending and participating in recitations

Difference from CS160/161

- More freedom in how to structure your program
- Larger program developed in an iterative, incremental manner over a number of assignments
- Pair-design and Pair-programming
  - Pair-design: 2 persons develop a program design
  - Pair programming: Code developed by 2 persons sitting side-by-side on a single computer.
    - [http://www.extremeprogramming.org/rules/pair.html](http://www.extremeprogramming.org/rules/pair.html)

Grading

Programming assignments 30%
Written assignments 15%
Quizzes 10%
Participation (attendance + involvement) 5%
Midterms (2) 20%
Final 20%

Grading Specifics

- Programming assignments:
  - 5 assignments with 2 weeks to complete
  - Each assignment builds on the previous.
  - Automated testing as in CS160/161
  - First is individual, rest are pair programming
- Written assignments:
  - 5 assignments with 1 week to complete
  - Mostly covering discrete math
  - All individual!
Assignments Timing

- Programming assignments are due on Wednesdays before noon.
  - Make sure your programs can execute on dept. machines
- Written assignments are due on Tuesdays by the start of class.
  Sometimes submitted via RamCT, sometimes hard copy in class.

More Grading Specifics

- Quizzes:
  - Three kinds:
    - Multiple choice in class
    - Before class on reading taken on RamCT
    - In recitation for programming
  - ~10 total, lowest 3 scores are dropped
  - No make-ups
- Participation:
  - Attendance records and exercise submissions in labs
  - iClicker & some tally on participation in lectures

Exams:

- Make-ups or reschedules for extreme circumstances only
- Programming component given in lab section during the week of the exam
  - Open text book
  - Access to Java API descriptions, but not open Web!
- Written component in lecture on specified date
  - Closed book

Policies

“Trust men and they will be true to you; treat them greatly and they will show themselves great.” Ralph Waldo Emerson

Be professional.
Late Policy

- Programming and Written Assignments
  - By due date/time: full credit
  - Within 48 hours after the deadline: 10% penalty
  - After 48 hours: 0

Distractions in the classroom

- Cell phones
  - Turn off (first choice) or on vibrate
  - If expecting an important call, sit close to the door and step out.

- Laptops & SmartPhones
  - Sit where you will not distract others
  - Do try to limit non-class related activities. Psychological evidence shows that we do not multi-task as well as we think we do.

Communication

- Check course website often:
  http://www.cs.colostate/~cs200

- RamCt will be used
  - to post grades
  - to answer questions about assignments
  - for online discussions with other students

iClicker

- General info: http://clicker.colostate.edu
- Register:
  - https://wsnet.colostate.edu/cwis262/clicker/registration.aspx
- First use: Tues September 2
Course Goals

To understand programs at different levels
- Logical view
  - Program = Algorithms + Data Structures
  - Understand their relationship and use them correctly, efficiently
- Implementation
  - Program = Objects + Methods
  - Practice design and implementation of object-oriented programs in Java
- Read others’ code and work together to build programs
- Connect theory to programming concepts

Programming Assignments

- A simple search engine for a set of web pages
- Given a query, the program returns web pages that “match”.
- Web pages are represented as collections of word frequencies.

http://computer.howstuffworks.com/internet/basics/search-engine1.htm

Design for Change Principle

- Anticipate how systems will evolve and design to accommodate change.
  - Lack of attention to this principle can result in changes that make system unstructured and difficult to understand and maintain.
Assignment 1

- First step is reading in a web page and finding the words.
- Due on September 10.
  - Team programming starts on second assignment.

Java Scanner Class

- **Scanner** divides an input stream (e.g., from a file or String) into words separated by delimiters.
- **Scanner** defines a grammar for syntax of numbers and uses *regular expressions* to define delimiters.

  *The theory of grammars and regular expressions will be covered in next lectures.*