

CS200 Fall 2014

Data Structures and Algorithms

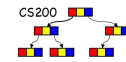
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“scientia est potentia”
(knowledge is power)

Sir Francis Bacon or Thomas Hobbes



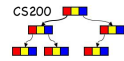
“I think a nerd is a person who uses the telephone to talk to other people about telephones. And a computer nerd therefore is somebody who uses a computer in order to use a computer.” Douglas Adams



CS200 structure

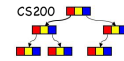
- Quizzes & Class Participation:
“are you with us?”
- Tests:
“what have you learned?”
- Programming assignments:
“can you implement it?”
- Written assignments:
“do you understand the underlying theory?”

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



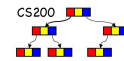
- More freedom in how to structure your program
- Larger program developed in an iterative, incremental manner over a number of assignments
- Pair-design and Pair-programming
 - Pair-design: 2 persons develop a program design
 - Pair programming: Code developed by 2 persons sitting side-by-side on a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

Grading



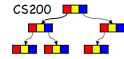
Programming assignments	30%
Written assignments	15%
Quizzes	10%
Participation (attendance + involvement)	5%
Midterms (2)	20%
Final	20%

Grading Specifics



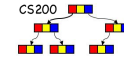
- Programming assignments:
 - 5 assignments with 2 weeks to complete
 - Each assignment builds on the previous.
 - Automated testing as in CS160/161
 - First is individual, rest are pair programming
- Written assignments:
 - 5 assignments with 1 week to complete
 - Mostly covering discrete math
 - All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



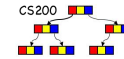
- Quizzes:
 - Three kinds:
 - Multiple choice in class
 - Before class on reading taken on RamCT
 - In recitation for programming
 - ~10 total, lowest 3 scores are dropped
 - No make-ups
- Participation:
 - Attendance records and exercise submissions in labs
 - iClicker & some tally on participation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

More Grading Specifics



- 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

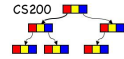
Policies



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

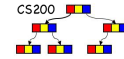
Be professional.

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



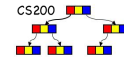
- Cell phones
 - Turn off (first choice) or on vibrate
 - If expecting an important call, sit close to the door and step out.
- Laptops & SmartPhones
 - Sit where you will not distract others
 - Do try to limit non-class related activities. Psychological evidence shows that we do not multi-task as well as we think we do.

Communication



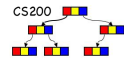
- Check course website often:
<http://www.cs.colostate/~cs200>
- RamCt will be used
 - to post grades
 - to answer questions about assignments
 - for online discussions with other students

iClicker



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

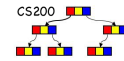
Course Goals



To understand programs at different levels

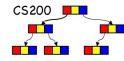
- Logical view
 - Program = Algorithms + Data Structures
 - Understand their relationship and use them correctly, efficiently
- Implementation
 - Program = Objects + Methods
 - Practice design and implementation of object-oriented programs in Java
- Read others' code and work together to build programs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

Course Goals

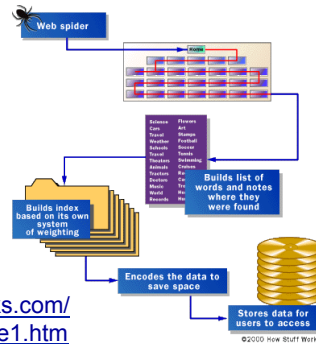


- An understanding of a variety of common data structures
- A practical understanding of where they are applicable

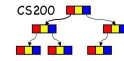
Programming Assignments



- 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.

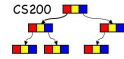


Design for Change Principle



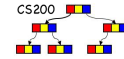
- Anticipate how systems will evolve and design to accommodate change.
 - Lack of attention to this principle can result in changes that make system unstructured and difficult to understand and maintain.

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.