



CSE332: Data Abstractions Lecture 28: Course Wrap-Up / Victory Lap

Dan Grossman Spring 2010

Final Exam

As also indicated in class-list email and on the web page:

- Next Tuesday, 2:30-4:20
- Intention is to test a subset of the topics in sorting, graphs, parallelism, concurrency, amortization
 - In other words, "stuff not covered by the midterm"
 - But as always the course topics build on earlier ones
- You will need to read and write Java, among other things
- Dan leaves town tomorrow morning, but will have email
 - Exam and course grades will not be available until June 13-14
 - Homework and project grades available sooner

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Victory Lap

A victory lap is an extra trip around the track

 By the exhausted victors (that's us) ☺

Review course goals

- Slides from Lecture 1
- What I told the faculty

Feedback from you on a new course being taught every quarter

- Anything to discuss as a group
- Course evaluations
 - Please spend even more time than usual on them

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Thank you!

Huge thank-you to your TAs

- New homeworks, projects, material, libraries
- Tyler: Use section to teach relevant programming idioms, project 3 guinea pig, teaching the course in summer, ...
- Brent: A cool GUI, project 2 unit-test examples, ...

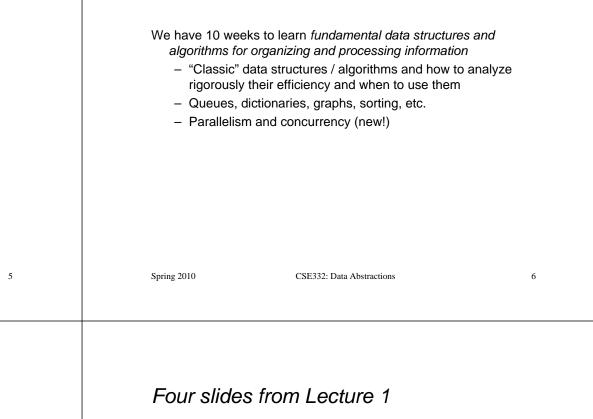


Thank you!

And huge thank you to all of you

- Great attitude about a new course
- Good class attendance and questions
- Occasionally laughed at stuff ©

Four slides from Lecture 1



Four slides from Lecture 1

- Introduction to many (not all) of the basic data structures used in computer software
 - Understand the data structures and the trade-offs they make
 - Rigorously analyze the algorithms that use them (math!)

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- Learn how to pick "the right thing for the job"
- More thorough and rigorous take on topics introduced in 143
 - And more
- Practice design and analysis of data structures / algorithms
- Practice implementing and using these data structures by writing programs
- · Experience the purposes and headaches of multithreading

- To be able to make good design choices as a developer, project manager, etc.
 - Reason in terms of the general abstractions that come up in all non-trivial software (and many non-software) systems
- To be able to justify and communicate your design decisions

Dan's take:

3 years from now this course will seem like it was a waste of your time because you can't imagine not "just knowing" every main concept in it

- Key abstractions computer scientists and engineers use almost every day
- A big piece of what separates us from others

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Four slides from Lecture 1

(Often highly non-obvious) ways to organize information in order to
enable efficient computation over that information

 Key goal over the next week is introducing asymptotic analysis to precisely and generally describe efficient use of time and space

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A data structure supports certain operations, each with a:

- Meaning: what does the operation do/return
- Performance: how efficient is the operation

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What I told the faculty about CSE332

Catalog Description:

Abstract data types and structures including dictionaries, balanced trees, hash tables, priority queues, and graphs; sorting; asymptotic analysis; fundamental graph algorithms including graph search, shortest path, and minimum spanning trees; concurrency and synchronization; and parallelism.

Goals:

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- Deep understanding of core data-structure trade-offs
- Fluency with asymptotic complexity, exponentials, etc.
- Ability to analyze correctness (?) and efficiency
- Recognizing basic opportunities for parallelism
- Addressing challenges of concurrent access to resources

Topics: Data structures + Threads

326 & 332 (20 lectures)

Big-Oh, Algorithm Analysis Binary Heaps (Priority Qs) AVL Trees B Trees Hashing Sorting Graph Traversals Topological Sort Shortest Paths Minimum Spanning Trees Amortization



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Topics: Data structure	es + Threads
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Big-Oh, Algorithm Analys Binary Heaps (Priority Qs AVL Trees B Trees Hashing Sorting Graph Traversals Topological Sort Shortest Paths Minimum Spanning Trees Amortization	s) Leftist heaps Skew heaps Binomial queues Splay trees Disjoint sets Network flow Hack job on NP (move		326 & 332 (20 k Big-Oh, Algorithm / Binary Heaps (Prio AVL Trees B Trees Hashing Sorting Graph Traversals Topological Sort Shortest Paths Minimum Spanning Amortization	Analysis Multithreading Bar rity Qs) Fork-Join Parallel • Using Java • Analysis: T • Amdahl's L • Reductions Concurrency (4) • Races, dea • Locks (more • Condition v	isics (1) lism (3) a library Γ1 and T∞ Law s, Prefix, Sorting adlocks
Spring 2010	CSE332: Data Abstractions	13	Spring 2010	CSE332: Data Abstractions	
What works			What might	not work	
 Triage 30% without kil Plus pretty deep se Projects use more Still keystone cour Parallelism and concul Natural fit (!): same Example: Sequ Example: Bour Example: Amd Data structures & a 	crub of other 70% modern Java (generics, iterator rse with algorithms, code, proofs urrency in this course e notion of trade-offs, asymptotic uential cut-off nded buffer for condition variable lahl's Law in the limit algorithms are canonical examp nquer, atomic operations, etc.	, and charts	 No textbook for Aimed for "teach 1.5 / 3 new proje No disasters Due to project so 	the parallelism and concurrency nable by others," but never quite s ects and lots of new slides s, but could use some sanding cheduling, graphs in weeks 6 and reduce, declarative queries	sure

Topics: Data structures + *Threads*

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Last slide

What do you think was good about 332?

What could be improved?

And:

Don't be a stranger: let me know how the rest of your time in CSE (and beyond!) goes... I really do like to know.

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