### What We’ve Covered

#### Summary

- **Topics**
  - Week 1: Aug 28
    - big-O, sorting
    - more sorting
  - Week 2: Sep 6
    - heaps
  - Week 3: Sep 11
    - hashing
    - binary trees
  - Week 4: Sep 18
    - red-black trees
    - red-black deletion
  - Week 5: Sep 25
    - tries
  - Week 6: Oct 2
    - knapsack
    - more DP
  - Week 7: Oct 11
    - parsing
  - Week 8: Oct 16
    - greedy
  - Week 9: Oct 18
    - graph traversal
  - Week 10: Oct 23
    - Midterm Exam (in class)
  - Week 11: Oct 30
    - spanning trees
    - shortest paths
  - Week 12: Nov 6
    - all pairs paths
  - Week 13: Nov 13
    - matching, LPs
  - Week 14: Nov 15
    - NP-completeness
  - Week 15: Nov 20
    - satisfiability
  - Week 16: Nov 24
    - clique
  - Week 17: Dec 4
    - approximation
  - Week 18: Dec 6
    - backtracking
  - Week 19: Dec 11
    - wildcard slot
  - Week 20: Dec 14
    - Final Exam, 10:30am-12:30pm? (finalized by registrar in Nov)

- **Criteria**
- **Everything Else**
- **Break**
- **Feedback**
- **Wildcard**

#### Topics

<table>
<thead>
<tr>
<th>Week</th>
<th>Class</th>
<th>Date</th>
<th>Topic</th>
<th>Book</th>
<th>Due</th>
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<td>8</td>
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<td>NP-completeness</td>
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<td>Nov 24</td>
<td>Thanksgiving</td>
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<td>Final Exam, 10:30am-12:30pm? (finalized by registrar in Nov)</td>
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How to Choose an Algorithm

- running time
- memory use
- solution quality (for optimization problems)
- guarantees on time, memory, or cost
- implementation complexity
  - correctness of algorithm & implementation
  - ease of testing
  - time to write
  - ease of maintenance
- generality
- popularity
  - ease of maintenance
  - correctness
- input required
- **topics**
  - geometry
  - strings
  - cryptography
  - numerical analysis
  - FFT

- **approaches**
  - randomized algorithms
  - on-line algorithms
  - parallel, distributed
  - cache-oblivious
  - external memory
  - models: quantum, DNA
Break

- final exam: Thu Dec 14 10:30am-12:30pm, Kingsbury N121
- no books, notes, gadgets, ...
- covers entire class with emphasis since midterm
We do read these.
They are anonymous and public.

There should be one for me and one for the TA — please fill out both!

Assignment most in need of revision?
Time for the wildcard topic!