

CMSC 351
Introduction to Algorithms

Spring 2018

Administration

- Jamie Matthews <jamie.matthews6@gmail.com>
- Class
- Webpage
- Syllabus
- Piazza
 - ▶ Ask questions (but do **not** ask if your answer or approach is correct).
 - ▶ Discuss issues.
- Elms
 - ▶ Get homework (maybe).
 - ▶ Hand in homework.
 - ▶ Get homework solutions.
 - ▶ See grades.
- Laptops and other devices: **Do not share.**

Administration (continued)

- Class attendance
 - ▶ You are responsible for what is said in class.
 - ▶ Lectures will be posted (mostly).
- Office hours
- Grading
- Exams
 - ▶ Two evening midterms: **6:00-8:00pm**.
 - ★ TBA
 - ★ TBA
 - ▶ Final exam
 - ★ TBA

Administration (continued)

- Textbook (on reserve at McKeldin Library)
 - ▶ Cormen, Leiserson, Rivest, and Stein, *Introduction to Algorithms* (3rd ed., 2009). MIT Press. (Any edition is fine.)
- Homework
 - ▶ Regular homeworks: typically due each Friday.
 - ▶ NP-completeness homeworks: typically due every other Wednesday.
 - ▶ **Programming project (unlikely).**
 - ▶ Must be in PDF.
 - ▶ Must be easy to read (your responsibility).
 - ▶ Late date: 25% off your actual grade. (One get-out-of-jail-free card.)
 - ▶ **Your neighbor should understand your answers.**
 - ▶ **Do problems from book (and other resources).**
 - ▶ **Study group.**
 - ▶ **You must write solutions yourself.**
- Office hours: posted on Piazza and on Webpage
- Academic integrity.

Topics (tentative)

- Introduction, Ch. 1,2
- Quadratic sorting algorithms
- Mergesort, Ch. 2
- Summations, Appendix A
- Recurrences, Ch. 4
- Heapsort, Ch. 6
- Quicksort, Ch. 7
- Sorting in Linear Time, Ch. 8
- Medians and Order Statistics, Ch. 9
- Graphs and Trees, Appendix B
- Minimum Spanning Trees, Ch. 23
- Shortest Paths: Dijkstra's algorithm, Ch. 24.3
- Introduction to NP-completeness, Ch. 34

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- Useful on the job.

What is an algorithm?

Definition

An *algorithm* is a finite list of step-by-step instructions for solving a problem.

Efficiency

- Time
- Space

Example

Tournament assignment. (Think about at home.)