

CMSC 351
Introduction to Algorithms

Fall 2016

Why learn this material?

- Algorithms are everywhere in Computer Science (and elsewhere).
- Useful for later courses
- Useful for computer programming
- Useful to get a job
- Useful on the job

Administration

- Webpage
- Syllabus
- Piazza
- Homework

Programming project (tentative).

Do problems from book (and other books).

- One evening midterm [date to be announced]
- Class attendance
- Office hours
- Academic integrity
- Grading

Topics (tentative)

- Introduction, Ch. 1,2
- Quadratic sorting algorithms
- Mergesort, Ch. 2
- Summations, Appendix A
- Growth of Functions, Ch. 3
- 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
- Dijkstra's algorithm, Ch. 24.3
- Brief introduction to NP-completeness, Ch. 34

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.)

Example

Decathlon and Heptathlon scoring. (Think about at home.)