Algorithms in a Nutshell
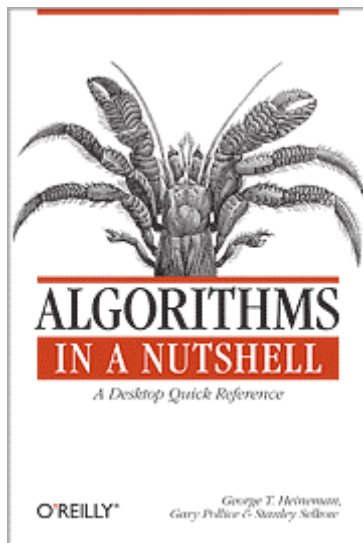
Overview

9:00 – 5:00

Outline for Day

Time Period	Description
9:10 – 9:40	Introduction
9:40 – 10:30	Chapter 4: Sorting
<break>	<break>
10:40 – 11:20	Chapter 5: Searching
11:20 – 11:40	Recap: Themes in Algorithms & Data Structure
11:40 – 12:00	Tutorial Deliverables
<lunch>	<lunch>
1:00 – 1:50	Chapter 6: Graph Algorithms
1:50 – 2:50	Chapter 7: Path Finding in AI
<break>	<break>
3:00 – 3:40	Chapter 9: Computational Geometry
<break>	<break>
3:50 – 4:20	Recap: Algorithms and Software Engineering
4:20 – 4:45	Summary

Ground Rules

- We have a lot to cover
  - But raise your hand if you have questions
- Presentation is a subset of the book contents
  - Just not enough time to cover everything
  - I apologize in advance if I've left out your "favorite" algorithm
- We cover some algorithms in detail
  - Selected for their importance
  - Selected to show a common problem solving approach

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- There will be interactive exercises
  - C, C++ and Java examples
  - No attempt to <u>time</u> the execution of algorithms

- In second morning session
  - Impact of binary search on insertion Sort
  - Impact of QuickSort on Hash-based Search

Slide Notations

- Code has tan background and Courier Font

```
class BinaryHeap {
 public:
  BinaryHeap (int);
  ~BinaryHeap ();
```

- Extra comments have blue background, italics

If these are the only operations you need, then you can use an ordinary Binary Heap for efficient implementation. However, we also need: