Grand Review

CSE 373
Data Structures
Lecture 23

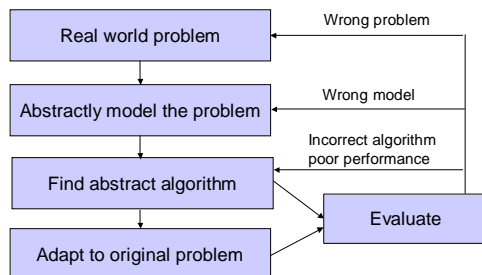## Algorithms and Data Structures

- Plumbing and wiring of programs.
- Design is a very creative activity.
  - › There are no formulas
  - › There are tried and true methods
- Think first - program later
  - › Design, design, design
  - › Code

Applied Algorithm Scenario

Evaluation Step Expanded
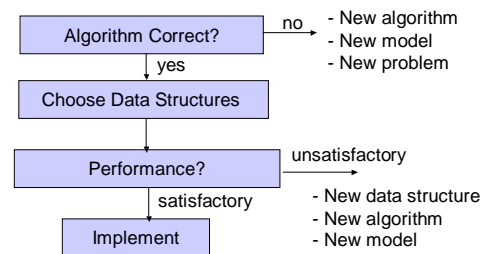

Tool Kit

- Data Organization
  - › Lists, trees, arrays
  - › Priority queues
  - › Up-trees
  - › Connections between them
- Algorithmic approaches
  - › Recursion
  - › Divide and Conquer
  - › Depth-first search
  - › Greedy
- Abstractions
  - › Graphs
- Algorithms
  - › Sorting
  - › Shortest paths
  - › Huffman codes
- Analysis
  - › Recurrences
  - › Worst case
  - › Amortized

What's Next

- Specific Applications (CSE 417, 410, 415)
  - › Graphics, simulation, games, networks, systems
- Programming Languages and Compilers (CSE 413)
  - › Languages and their implemenations
- Software Engineering
  - › Engineering large programs
- Algorithms (CSE 417)
  - › Deeper study of algorithms
  - › Mathematical
- Computational Complexity (CSE 417)
  - › Study of the inherent time and storage needed to solve problems.