Text Book:
Introduction to the Design and Analysis of Algorithms
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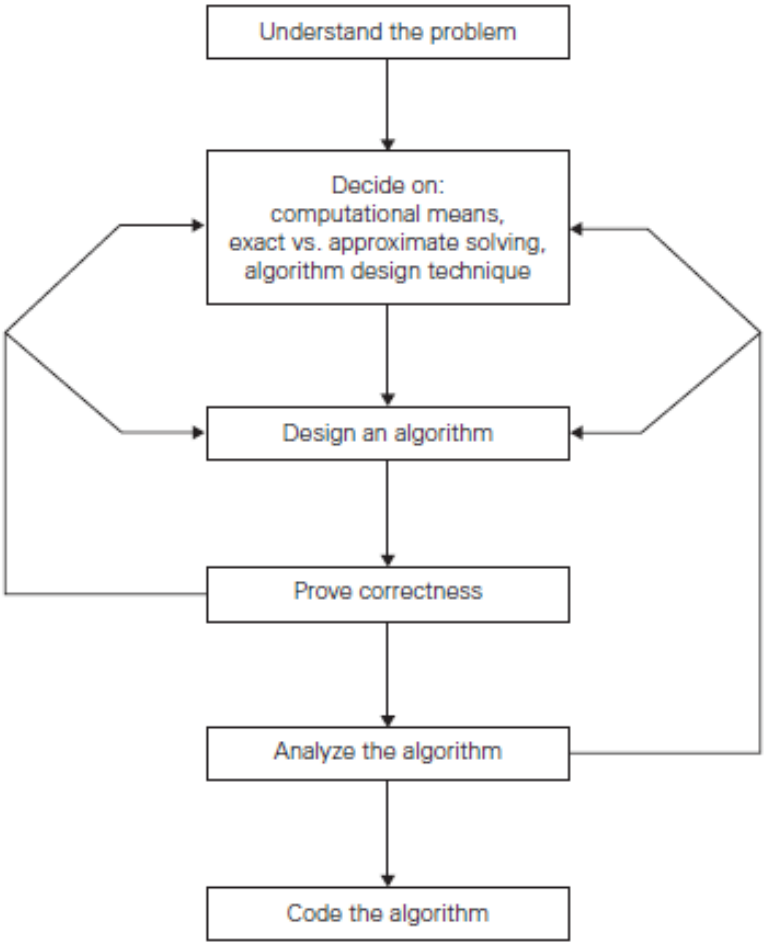
2nd Edition

## Fundamentals of Algorithmic Problem Solving



## Understand the Problem

- Algorithms are procedural solutions to problems.
- An input to an algorithm specifies an instance of the problem the algorithm solves.
- Boundary conditions should be clearly understood

## Decide on computational means

- Sequential vs Parallel algorithm
- Exact vs Approximation algorithm
- Data Structures + Algorithms = Programs

## Design Algorithm

### Specifying algorithm

- Natural Language
- Pseudo code
- Flowchart

## Correctness:

### Mathematical Induction

Exact Algorithms: correct algorithm is the one that works for all legitimate inputs.

Approximate Algorithms: Error in tolerance limit

## Analyzing Algorithm

- Time vs Space efficiency
- Simplicity vs Generality

## Coding the algorithm

- Testing
- Debugging
- Code optimization