Design, Analysis and Implementation of Algorithms

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Introduction

- Questions you may have
  - What are algorithms?
  - Why do we learn this course?

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  - **Algorithms**: A well-defined computational procedure that takes a set of values as input and produces a set of values as output
  - **Objectives of the course**
    - ★ Skills: Design, analysis and implementation of algorithms

Plan

- Basic
  - Chapter 1: Introduction to algorithms and data structures (weeks 1-2)
  - Chapter 2: Recursion, Backtracking, and Branch-and-Bound (weeks 3-5)
  - Chapter 3: Greedy algorithms (weeks 6)
  - Chapter 4: Divide-and-Conquer (week 7)
  - Chapter 5: Dynamic Programming (weeks 8-9)
  - Chapter 6: Graph algorithms and applications (weeks 10-11)
- Advances
  - Chapter 7: Advanced data structures and applications (weeks 12-13)
  - Chapter 8: Algorithms on Strings and applications (week 14-15)

References

1. T.H. Cormen, C.E. Leiserson, R.L. Rivest, C. Stein. Introduction to Algorithms. Second Edition, MIT Press, 2001
2. Robert Lafore. Data structures and Algorithms in Java (2nd Edition) Sams Publishing, 2002