

Exam 1: Suggested Reading and Practice Problems

Topic	CLRS	KT
Asymptotic Order of Growth, Complexity of Algorithms	<u>Reading:</u> Chapter 3 <u>Practice problems:</u> - Exercises: 3.1-1, 3.1-2, 3.1-4 - Problems: 3-3, 3-4	<u>Reading:</u> Chapter 2 <u>Practice problems:</u> - Solved Exercise: 1 and 2 - Exercise (end of chapter): 1-5
Divide and Conquer	<u>Reading:</u> Chapter 4, Chapter 2, Chapter 7 <u>Practice problems:</u> - Exercise: 4.2-1, 4.4-1, 4.4-2, 7.2-1, 7.2-2, 7.2-3 - Problems: 4-1, 4-5	<u>Reading:</u> Chapter 5 <u>Practice problems:</u> - Solved Exercise: 1 and 2 - Exercise: 3
Dynamic Programming	<u>Reading:</u> Chapter 15 <u>Practice problems:</u> - Exercise: 15.1-3, 15.1-4 - Problems: 15-2, 15-3	<u>Reading:</u> Chapter 6 <u>Practice problems:</u> - Solved Exercise: 1 - Exercise: 2, 4

Notes:

- Readings: You do not need to cover topics which have not been covered in the lectures.
- Preparation:
 - Start with lecture slides, comprehend step-by-step solutions
 - Textbook suggested readings
 - Run the demo codes and print step-by-step computations/results
 - Homework assignments
 - Practice problems
- Possible Type of Questions:
 - Short answer, True/False, Asymptotic notation
 - Algorithm time and space complexity, Master Theorem
 - Modification/variations/application of the algorithms and examples discussed in class
 - Worst case/best case of the discussed algorithms
 - Complete or write the next step of the iterations of a given solution, e.g., next step of merge-sort
 - Design a divide-and-conquer or dynamic programming algorithm, including writing the recurrence relation and base case
- Further practice problems: DPV
- Closed-book exam; no calculator; one page of notes
 - Letter size, both side
 - Algorithms, examples, tables, figures, etc.
 - Typed or hand-written