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|  | **Algorithm Design and Analysis**  **Assignment 04: Dynamic Programming and Transform & Conquer** |

**Total Points:** 40

**Released:** Monday, 25th March 2019

**Due:** Tuesday, 2nd April 2019

**Submission format:** Hard copy to the FI

**Instructions**

* Submit individual solutions to this assignment. Refer to the policies regarding collaboration in the syllabus.
* Submit a hard copy of your solutions to the assignment to the FI before 5pm on the due date.

**PART A [24 points]: Dynamic Programming**

Study Sections 8.1, and 8.2 with your study partner/group. Discuss key ideas as well as things you do not understand and bring questions to office hours.

**Problem 1 [3 points]:** *Coin row problem*

Exercise 8.1, #2

**Problem 2 [5 points]:** *Rod-cutting problem*

Exercises 8.1, #6.

**Problem 3 [5 points]:** *The knapsack problem*

Exercises 8.2, #1.

**Problem 4 [6 points]:** *The knapsack problem*

Exercises 8.2, #2.

**Problem 5 [5 points]:** *The knapsack problem*

Exercises 8.2, #6.

**PART B [16 points]: Transform & Conquer**

Study Sections 6.1, and 6.6 with your study partner/group. Discuss key ideas as well as things you do not understand, and bring questions to office hours.

**Problem 6 [8 points]:** *Pre-sorting*

Exercises 6.1, #2.

**Problem 7 [4 points]:** *Problem-reduction: stacks and queues*

Exercises 6.6 , #2.

**Problem 8 [4 points]:** *Problem-reduction: points in a plane*

Exercises 6.6 , #5.