

Concepts and Algorithms of Optimization – Series 10

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Exercise 1

Consider the sequencing problem of the *Color Ink* company given in Series 1.

- (a) Give an integer programming formulation of this problem.
- (b) Solve the given problem by applying AMPL.

Exercise 2

You are planning to play a friendly squash tournament together with four of your friends, Arthur, Boris, Cecilia, and Daisy. In the tournament, every pair of players has to play a 1 vs. 1 game, i.e. there will be 10 games in total. You have a single court available on which all games will be played sequentially. For reasons of fairness no player should play two consecutive games, such that every player has a break after each of his/her matches. You want to determine a feasible schedule that meets this criterion. Every such schedule is equally suitable.

- (a) Give a graphical representation of the problem and state to which graph-based problem the situation corresponds.
- (b) Give a general mathematical formulation of the underlying graph-based problem.
- (c) Arthur unfortunately will just barely make it to the court at the intended starting time of the tournament. He asks whether it is possible to make sure he does not have to play in the first game. How could this restriction be included in the mathematical problem formulation?