Computational methods in operations research

28 March, 2019

Exercise 1. Open the Examples/tsp.mod file in the GUSEK folder, and try to understand the model.

Exercise 2. Find a minimum cost spanning tree in the graph described in the tsp.mod file.

Exercise 3. Given a directed graph $D = (V, A)$ together with a capacity function $c : A \to \mathbb{R}_+$. Write up an LP formulation of the maximum flow problem.

Exercise 4. Given an undirected graph $G = (V, E)$, give an IP formulation of the maximum cut problem.

Exercise 5. Open the Examples/train.mod file, and explain the role of each constraint.

Exercise 6. Given a polyhedron $P = \{x \in \mathbb{R}^n : Ax \leq b\}$ and a vector $a \in \mathbb{R}^n$, write up the following two problems as LP's:

(a) $\min\{\| x - a \|_\infty : x \in P\}$,

(b) $\min\{\sum |x_i - a_i| : x \in P\}$.