

DM833 – Weekly Note 8

Lectures in week 22

Monday, May 27

- Arto will give a 10 minutes presentation of the exam question Steiner Tree and TSP.
- We will continue with Chapter 15: The primal-dual schema applied to Set Cover.
On Wednesday, May 22, I gave an overview of the method and developed relaxed complementary slackness conditions for the set cover problem.

Tuesday, May 28

- Daniel will give a 10 minutes presentation of the exam question Vertex Cover and Set Cover.
- Exercise 14.1
- Exercise 15.5.
Note that what you are asked to do in the first part of the exercise is to find a primal-dual algorithm with an approximation guarantee of $\frac{1}{2}$.
Hint: Start with the primal solution $x_e = 0$ for all $e \in E$ and the dual solution $y_v = \max_{e \in E(v)} w_e$ for all $v \in V$, where $E(v)$ denotes the set of edges adjacent to v . Picking an edge (u, v) for the matching may give rise to updates of the dual variables corresponding to neighbors of u and v .

Wednesday, May 29

We will use this lecture, only if there is any unfinished business.

Exam questions

1. Vertex Cover and Set Cover
2. Steiner Tree and TSP
3. Multiway Cut and k-Center
4. Knapsack and Bin Packing
5. Scheduling to minimize makespan
6. Linear programming techniques

See the course homepage for details about the exam.

Syllabus (pensum)

The syllabus consists of the following sections of the textbook:

1.1, 2.1, 3, 4.1, 5, 8-10, 12.1, 12.3, 13.1, 14-15