Institut for Matematik og Datalogi
Syddansk Universitet

November 2, 2022
JBJ

DM551 – Fall 2022 – Weekly Note 8

Stuff covered in week 44
We covered

- Rosen 8.1-8.2. Covered by a video lecture.
- Kleinberg and Tardos 13.5
- Kleinberg and Tardos 13.9
- Cormen 7.4.2 on Quicksort
- Maxback orderings. See notes by Mette Eskesen on the home page. You are **NOT** responsible for the proofs, except that of Theorem 5. You should also know the algorithm for finding $\lambda(G)$ that is described in the notes.
- Midterm evaluation of the course. I will compile a list with those comments that got many votes and comment on these. The list will be made available on itslearning.

Lectures in week 45
There are two lectures and they will both be on flows in networks. The material for this is Cormen 3rd ed. Sections 26.1-26.3. You may also use Bang-Jensen and Gutin Chapter 3, sections 3.1-3.6.1. Note that these pages contain more material than we will cover so if you have access to Cormen, you should use that is the primary source.

- The Maximum flow problem. Cormen 26.1
- The Ford Fulkerson method. Cormen 26.2
- The Edmonds Karp algorithm. Last part of Cormen 26.2
- If there is time we will also talk about the bipartite matching problem. Cormen 26.3

Exercises in week 45

- Exam January 2010 Problem 5
- Kleinberg and Tardós Problem 7 page 787.
- DM538 Exam 2015 Problem 1

- DM528 Exam 2009 Problem 1
- Solve the linear recurrence equation $a_n = 4a_{n-1} - 4a_{n-2}$ with initial conditions $a_0 = 1, a_1 = 4$
- Solve the linear recurrence equation $a_n = 4a_{n-1} - 4a_{n-2} + n^2$ with initial conditions $a_0 = 22, a_1 = 43$.