Institut for Matematik og Datalogi
Syddansk Universitet

August 25, 2022
JBJ

DM817 – Fall 2022 – Weekly Note 1

Welcome to the course DM817: Network Programming!

Litterature

- Main book (Ahuja): Ahuja, Magnanti og Orlin: 'Network Flows', Prentice Hall 1993. Available from the bookstore.

- We will also use Chapter 3 of the book Bang-Jensen and Gutin (BJG): 'Directed Graphs, theory, algorithms and applications', Springer Verlag 2000 (last updated version August 2007). This book is available for free download from the course page. **You should download a copy of Chapter 3 and always have it available!**

Evaluation
Oral exam graded according to the 7-scale with external examinator.

Time slots for the course
See Itslearning.

Format
The schedulde contains two slots per week. One labelled F (lecture) and the other labelled E (exercises). In practice there is no distinction between the two as I will sometime lecture in an E slot and have exercises in an F slot, depending on how it fits optimally with the present topic we study. **Note that, as indicated in the course description, a number of the lectures will be video lectures**. This means that some of the physical classes will be cancelled. I will announce this in due time and make the videos available (via course media gallery) in due time! So always look at the weekly note and the itslearning page of the course!

Lectures in Week 35 and 36 and self-study to do at the beginning of the course.

The material below may look overwhelming but much of it is known to you already from other courses and there is a big overlap between the pages in BJG and those in Ahuja. Whenever something is covered in BJG I we use that as main text for the lecture.

- Overview of the content of the course.

- Selected parts of Ahuja Chapters 1+2. You should read all of Chapter 1 (we will not cover all the examples but you should read the text so that you know where to find the topics again). In Chapter 2 it is mainly sections 2.4-2.5 that will be covered.

- Ahuja Section 3.5. This section is very important and will be covered carefully.

- BJG sections 3.1-3.5.

- Ahuja 4.1-4.4 (mostly self study and repetition from DM507). We will come back to some of these topics later in the course

- Ahuja 6.1-6.5

Problems for first exercise class on September 9, 2022

I expect you to have looked at all exercises before the class and for those that you could not solve, you should be able to say what prevented you from getting through!

- Ahuja 1.1, 1.2, 1.4, 1.5, 1.8, 1.9, 2.12, 2.21 (see definition of bipartite graph on page 31), 2.45, 2.51.

- Try to show that a directed graph is bipartite (same definition as for undirected graphs) if and only if it has no directed cycle of odd length.

- BJG problems 3.2, 3.7, 3.8.