Institut for Matematik & Datalogi
Syddansk Universitet

23. februar 2007
JBJ

DM85 Networks and Integer Programming — Ugeseddel 4

First obligatory assignment It will be available on the course page early in week 10. It must be handed in on monday April 2 at noon or earlier. You may work in groups of up to 3. The assigmnents will be graded according to the 13 scale by me and the grade will count 25% for you total grade.

Moving some lectures We agreed to move the following lectures:

- Monday February 26 to Tuesday February 27 12-14 in the seminarroom
- Monday March 5 to Tuesday March 6 12-14 in the seminarroom
- Monday March 12 to Tuesday March 12-14 in the seminarroom

Lecture on February 23, 2007: Project scheduling based on handout material (Chapter 10 in Hillier and Liebermann). The material was be handed out on Feb. 16. We also started on the handout chapter by Bang-Jensen and Gutin on flows. We covered most of Sections 3.1-3.3 and you should read the rest yourselves.

Lecture on February 27, 2007: We will continue with flows from Bang-Jensen and Gutin. We will cover Sections 3.4- 3.6.

Lecture on March 2, 2007 We will continue on flows in networks from the chapter by Bang-Jensen and Gutin.

Exercises for March 2, 2007:

1. Wolsey 3.8.6, 3.8.7, 3.8.11
2. Formulation of an IP-problem

   In the strategic manpower planning problem we consider a strategic assessment of the demand of manpower for an organisation. Consider an organisation that is open 7 days a week with 1 shift a day.

   - The number of employees needed varies from day to day but is constant on a weekly basis (we will call those numbers b1 for monday, b2 for tuesday etc.)
   - All employees must work 5 consecutive days and have two days off.
   - The objective is to minimize the number of employees and find out when they have to work.

   (a) Formulate a mathematical model that solves the strategic manpower planning problem as described above.
   (b) Solve the problem for b1=10, b2=5, b3=10, b4=5, b5=10, b6=5, b7=10.
   (c) Solve the problem for b1=8, b2=8, b3=8, b4=8, b5=8, b6=8, b7=7.

(d) How can you compute the unused number of man days? Calculate the number of unused days for the two examples above.

(e) The labour costs vary depending upon the days off. How can we change the objective function to incorporate that?