Department of Mathematics and Computer Science
University of Southern Denmark, Odense

March 4, 2005
LMF

DM69 — Lecture 6

Lecture 6 — March 9

Bang-Jensen and Gutin:

- Section 3.7.2
- Section 3.10
- Section 3.11.1

Problems for March 11

Bang-Jensen and Gutin:

1. Explain how to implement the generic preflow-push algorithm using $O(n)$ time per lift operation, $O(1)$ time per push, and $O(1)$ time to select an applicable operation (lift or push). Argue that this gives a total running time of $O(n^2 m)$.
2. Suppose that all capacities in a flow network $\mathcal{N}$ are in the set $\{1, 2, \ldots, k\}$. Analyze the running time of the generic preflow-push algorithm in terms of n, m, and k.
   Hint: How many times can each edge support a nonsaturating push before it becomes saturated?
3. Problem 3.40 (Assume that x is an integer flow.)
4. Problem 3.43
5. Problem 3.47