Institut for Matematik og Datalogi
Syddansk Universitet

May 1, 2003
JFB

On-Line Algorithms – F03 – Note 11

Lecture, April 25

We covered through section 10.4 of chapter 10 and looked at the algorithms in sections 10.6 and 10., but skipped the proofs. Then we covered through section 12.1 of chapter 12.

Lecture, May 2

We will continue on chapter 12, covering sections 12.2, 12.3, and

Lecture, May 9

We will continue on chapter 12 and possibly start on the relative worst order ratio.

Problems for Wednesday, May 7

1. (Easy) Show that the makespan problem for identical machines is NP-hard.

2. Suppose that GREEDY is allowed n identical machines, while OPT is only allowed to use $m < n$ machines. Give a sequence showing that the ratio of GREEDY's performance to OPT's can be at least $1 + \frac{m-1}{n}$ for the makespan problem. Then show that GREEDY can always achieve this ratio against such a bounded OPT.

3. Consider remark 12.1 on page 208. What is meant here? Why is there no problem if the loads can be greater than 1? (Do not try to prove the desired result for loads at most 1.)

4. Define POST-GREEDY with release dates as the algorithm which assigns a new job (given at its release date) to the first processor which becomes free. Show that POST-GREEDY is $(2 - \frac{1}{N})$-competitive.