Institut for Matematik og Datalogi
Syddansk Universitet

March 3, 2003
JFB

# On-Line Algorithms – F03 – Note 5

## Lecture, February 28

Kim Skak Larsen finished chapter 3 and covered section 4.1 of chapter 4. During the second hour, I gave an overview of chapters 6, 7, and 8, and covered section 6.1 of chapter 6.

## Lecture, March 7

Kim Skak Larsen will finish chapter 4.

## Lecture, March 14

We will finish chapter 6.

## Problems for Wednesday, March 12

1. Do Exercise 4.2 in the textbook.
2. Do Exercise 4.3 in the textbook.
3. Do Exercise 4.5 in the textbook.
4. Do Exercise 4.6 in the textbook.
5. Consider an optimal offline paging algorithm. Find arbitarily long request sequences with more than $k$ pages for which it does not help OPT if it had more than $k$ pages in its fast memory (i.e. OPT should have the same number of page faults with $k$ pages as it would have with more pages).

6. Consider an algorithm with lookahead $s$, meaning that when deciding what to do about the current page request, the algorithm can see the next $s$ requests before deciding what to do.

   - Prove that any such deterministic algorithm has competitive ratio $k$.
   - Consider LRU($s$), the algorithm which uses the LRU rule, ignoring (and never evicting) any page in the next $s$ requests. Show that it does at least as well as LRU on any request sequence.