Institut for Matematik og Datalogi
Syddansk Universitet

March 1, 2006
JFB

On-Line Algorithms – F06 – Lecture 6

Announcement

On Tuesday, March 7, we will meet in U10 at 12:15.

Lecture, March 1

Kim Skak Larsen covered chapter 3 and up through Theorem 4.1 of chapter 4 in the textbook.

Lecture, March 8

Kim Skak Larsen will finish chapter 4 and I may begin on chapter 6 if there is time.

Lecture, March 14

We will cover chapter 6 in the textbook.

Problems for March 7

1. Do Exercise 3.2 in the textbook.
2. Do Exercise 3.3 in the textbook.
3. Do Exercise 3.6 in the textbook.
4. Do Exercise 3.7 in the textbook.
5. Do Exercise 3.8 in the textbook.
6. Do Exercise 3.9 in the textbook.
7. Do Exercise 3.10 in the textbook.

Problems for March 15

1. Do Exercise 4.2 in the textbook.
2. Do Exercise 4.3 in the textbook (for $h = k$).
3. Do Exercise 4.5 in the textbook.
4. Do Exercise 4.6 in the textbook.
5. Consider an optimal offline paging algorithm. Find arbitrarily 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 look-ahead 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 at least 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 (assuming they start with the same pages in fast memory).