Institut for Matematik og Datalogi
Syddansk Universitet

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JFB

On-Line Algorithms – F06 – Lecture 4

Lecture, February 14

We continued with chapter 1 in the textbook, covering up through the definition of phases in section 1.6.

Lecture, February 21

We will finish chapters 1 and 2 in the textbook.

Lecture, March 1

Kim Skak Larsen will begin on chapters 3 and 4 in the textbook.

Problems for February 22

1. Exercise 1.11 in the textbook. To make the factoring lemma hold in the full cost model, change the definition of $\mathrm{ALG}(x, j)$ to add one for the positive comparison. Try adding something to the original definition, even in the case where r_j is in front of x. Then, when comparing MTF to OPT, try looking at two different times where MTF pays the maximum, while OPT pays the minimum.

2. Exercise 1.12 in the textbook.

3. Give a request sequence for TIMESTAMP, where TIMESTAMP's performance ratio is exactly 2 in the partial cost model. You may assume any starting configuration.

Problems for February 28

1. Exercise 2.1 in the textbook.
2. Exercise 2.3 in the textbook (but only for the static case).
3. Show that there is a request sequence on which BIT's performance ratio is no better than $\frac{7}{4}$ in the partial cost model. (It is sufficient to look at lists of length 2.)
4. Do Exercise 2.4. Note that the lower bound will depend on p, rather than being $2 - \epsilon$.
5. How do you define BIT and COMB in the dynamic model?
6. Do Exercise 2.5 in the textbook.