

On-Line Algorithms – F19 – Lecture 2

Lecture, February 4

We began with an introduction to the course. Then, we began on chapter 1 in the textbook, covering up through the statement of Theorem 1.1, plus some intuition about the amortized analysis.

Lecture, February 5

We will continue with chapter 1 in the textbook.

Lecture, February 11

We will finish chapter 1 and begin on chapter 2 in the textbook.

Problems for February 12

1. Problems that we didn't finish on February 6.
2. In the proof of the lower bound for FC, what happens if the adversary simply gives k requests to each of the different pages, instead of $k+1-i$?
3. Exercise 1.11 in the textbook. To make the factoring lemma hold in the full cost model, change the definition of $\text{ALG}(x, j)$ 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.
4. Exercise 1.12 in the textbook.

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