

DM205 – On-Line Algorithms – Lecture 2

Lecture, August 30

- Introduction to the course.
- Borodin & El-Yaniv, Sections 1.0–1.4.

Lecture, August 31

- Borodin & El-Yaniv, Sections 1.5–1.6.

Lecture, September 6

- Borodin & El-Yaniv, Chapter 2.

Exercises, September 7

All references are to the textbook by Borodin & El-Yaniv unless otherwise stated.

1. Remaining exercises from last time.
2. Exercise 1.11. 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.
3. Exercise 1.12.
4. 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.
5. 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 $k + 1 - i$?