On-Line Algorithms – F17 – Lecture 10

Lecture, March 8

We finished chapter 8 and began on the paper, "The relative worst order ratio applied to paging", by J. Boyar, L.M. Favrholdt, and K.S. Larsen, in *Journal of Computer and System Sciences*, volume 73, pages 817–843, 2007. You get this through the electronic journals SDU's library has (using the link on the course's homepage). In section 2, we will initially only consider definitions 1 and 2 and skip the others. Next we will cover up through Corollary 3 of section 4, and then section 6. Note that the slides are available through the course homepage.

Lecture, March 14

In section 2 of "The relative worst order ratio applied to paging". we will initially only consider definitions 1 and 2 and skip the others. Next we will cover up through Corollary 3 of section 4, and then section 6. Note that the slides are available through the course homepage.

Lecture, March 28

We will cover section 3, the definitions for relatedness and weakly comparable in section 2 and Theorem 7 of section 5 of "The relative worst order ratio applied to paging". If there is time, we will cover Theorem 8 in section 5 of "The relative worst order ratio applied to paging".

No class March 20–24. Two PhD defenses in online algorithms

Christian Kudahl, "Complexity class for online problems", March 21, 13:00, in U47.

Jesper With Mikkelsen, "Randomization versus advice in online computation", March 22, 13:00 in U44.

Problems for March 29

1. Problems that we didn't finish from March 15.

2. In the definition of RLRU, in the case where p is requested, but there is not fault, the algorithm only marks the next page if it is different from the previous. What happens to the results on RLRU if this check is removed and the page is always marked. What if it is never marked?

3. In the definition of RLRU, what if you change the condition starting a new phase to be "the $k + 2$nd different page since the start of the last phase was found" or "this was the $k + 2$nd fault since the start of the last phase"? What happens to the results on RLRU?

4. Can Yao's principle be applied to the relative worst order ratio?

5. Work out an example showing how to change a worst case ordering for LRU to a worst case ordering for PERM_π.