

On-Line Algorithms – F10 – Lecture 7

Lecture, May 4

After discussion section, I lectured on chapter 6.

Lecture, May 6

We finished chapter 6 in the textbook and began looking at the paper: “The relative worst order ratio applied to paging”, by J. Boyar, L.M. Favrholt, and K.S. Larsen, in *Journal of Computer and System Sciences*, volume 73, pages 817–843, 2007. We covered definitions 1 and 2.

Lecture, May 11

We will cover sections 3 and 6, the definitions for relatedness and weakly comparable in section 2 of “The relative worst order ratio applied to paging”, and Theorem 7 of section 5.

Lecture, May 25

We will cover Theorem 8 in section 5 of “The relative worst order ratio applied to paging”, and chapters 7 and 8 in the textbook quickly.

Problems for May 27

1. 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?

2. 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?
3. Compare MTF and TRANS for the list processing problem, using the relative worst order ratio.
4. How would you define a “strict 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 .