

On-Line Algorithms – F05 – Lecture 8

Lecture, March 29

We began looking at the article “The relative worst order ratio applied to paging”, at <http://www.imada.sdu.dk/~joan/online/paging.pdf>. In section 2, we initially only considered definitions 1 and 2 and skipped the others. We covered up through Theorem 5 of section 4, and then section 5.

Lecture, April 5

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

Lecture, April 12

We will cover section 7 of “The relative worst order ratio applied to paging”, and then chapter 7 in the textbook quickly. We will begin on chapter 8, probably getting up to the statement of von Neumann’s Theorem.

Problems for April 11

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 .