

On-Line Algorithms – F19 – Exam

The material you are responsible for with respect to the exam is on the reading list on the course homepage.

The “questions” (topics) for the exam are listed below. Emphasis should be on the analyses and proofs in the following:

1. List accessing with emphasis on `TIMESTAMP`
2. Randomized algorithms for list accessing
3. Upper bounds for marking algorithms and lower bounds for paging in general
4. Randomized paging algorithms
5. The relative worst order ratio for paging, with emphasis on look-ahead or `RLRU`.
6. `K`-server algorithms on the line and trees
7. Using Yao’s principle to prove a lower bound on randomized paging
8. The algorithm `GREEDY` for the identical and the restricted machine model for load balancing
9. Advice complexity, with emphasis on bin packing or the complexity class `AOC`

The exam will take place on June 11. The ordered list of students cannot be used to exactly calculate an exam time since some students may not show up. If a student is not there, the next student on the list who is present will be taken. When there are no more students ready to be taken, the external examiner may leave, so show up plenty early to make sure you are examined. Two hours before your expected exam time is probably safe enough, though not towards the end of the day.

You will draw a topic from the list of topics listed above. You will have about 30 minutes to prepare your presentation. During this time you may use the book and your notes. You may also make short notes that will help you to organize your presentation, but that will have no other technical content. The exam will take about 30 minutes per person. Prepare your presentation so that it takes about 10 to 15 minutes. Make sure you cover the most important ideas from your topic, though this may mean that you need to skip some details. Your presentation may be interrupted with questions or cut short to go on to other topics. Towards the end of the 30 minute period, you will typically also be asked short questions not related to the material you talked about.

You may do your presentation in either Danish or English (though Danish is recommended if that is your native language).