Topics for the exam in DM553/DM508

The topics are:

1. Finite automata and regular languages

2. Pushdown automata and context-free languages

3. Turing machines

4. Decidability

5. Reducibility

6. NP-completeness proofs – examples.

7. Proof that SATISFIABILITY is NP-complete.

8. Information-theoretic lower bounds (lower bounds proven by counting leaves in decision trees), especially the average case bounds for sorting by comparisons.

9. Adversary arguments – technique, examples.

10. Approximation algorithms

The oral re-exam will take place at the end of June. The sign-up sheets for the order in which students will be examined will be sent around at the last lecture. If you do not put your name on then, Lone will put it on for you. You will receive a list through Blackboard of the order students in DM553/508 will take the exam along with a starting time for the first student to draw a question. The sign-up lists cannot be used to exactly calculate an exam time since some students may not show up. Since, as for all classes, the external examiner is only paid for students who are examined, not for sitting and waiting, if a student is not there, the next student on the list (or the first student for the next course) 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. The first first few students should show up at the start time.)

You will draw a topic from the list of topics listed above. Students taking DM553 are responsible for the entire set of questions, but students taking DM508 are only responsible for the last five. The first five correspond to chapters in the textbook by Sipser. You will have 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 strongly recommended).

Come ask Joan if you have any questions.