

Study Sheet Final Exam

The final exam is cumulative. Please, look at the study sheets for the midterms 1 and 2. This exam will assume you know the material covered in lecture/recitation/homework/programming-assignments until Tuesday 2016-12-06.

The material that was not previously covered for the midterms corresponds to parts of Chapter 5, Chapter 7, and Chapter 8 and 9 about space complexity and Hierarchy Theorems.

In particular, you have to be prepared to do the following:

- Do anything mentioned in the study sheet exam 1 and 2.
- Define and apply mapping reducibility to prove decidability/undecidability of a given problem.
- Define and apply reductions via computation histories techniques to solve problems. (TM running with fixed tape size etc.)
- Prove the undecidability of the Post Correspondance Problem.
- Give the definition of the time or space complexity classes.
- Relate different complexity classes to one another.
- Define P and NP.
- Prove that a problem is in P or in NP.
- Define NP-completeness.
- Prove that SAT is NP-complete (Cook-Levin Theorem).
- Prove that a language is NP-complete.
- Analyze the time or space complexity of a given algorithm.
- Explain results on Space complexity and hierarchy theorems.
- Analysis of new material from the discipline.