CSE 322
Introduction to Formal Models in Computer Science
Pre-midterm preparation

Spring 2005

Paul Beame 29 April 2005

The midterm is Friday, May 6 in class. There will be a review session, Thursday May 5 at 4:30, place TBA.

The midterm will cover up to the end of the material on Finite Automata.

1. Strings and languages and operations on them.
2. Regular expressions and regular languages.
3. Deterministic finite automata: Formal definition, δ^*, $L(M)$, as well as state diagrams.
4. Nondeterministic finite automata: Formal definition, $L(M)$ for NFAs as well as state diagrams.
5. Converting NFAs to DFAs: The subset construction.
6. Using finite automata for pattern matching.
7. Construction of an NFA to accept any regular language.
8. Construction of a regular expression representing the language accepted by any NFA.
9. Closure properties of regular languages, e.g. closure under complement, intersection, reversal.
10. Proofs that languages are not regular using the pumping lemma and using equivalence relation $\equiv_A$.
11. The fact that (not the proof) A is regular if and only if $\equiv_A$ has a finite number of equivalence classes.
12. Minimizing DFAs.