

ECE 468

Problem Set 1: Regular expressions and finite automata

1. Give a regular expression that can match street addresses. In our definition, a street address consists of a number, followed by an optional letter, for the house/apartment number, then one or more capitalized words for the street name, then either “Dr.”, “Rd.” or “St.” for the street type.
2. Give a *non-deterministic* finite automaton that matches the following regular expression:

$$((x|y) * a)|(x * a*)$$

3. Give a *deterministic* version of the finite automaton, using the construction we described in class. You only need to show the state transition diagram.
4. Derive the reduced DFA. Show both the graphical representation of the automaton and the state transition diagram.