

CS334, Fall 2004 – Joan Krone: Assignment 2

1. Draw a NFA that recognizes the language  $L = \{ \text{any number of } ab\text{'s followed by any number of } ba\text{'s} \}$ .
2. Draw a NFA that recognizes  $L = \{xx \mid x \in \{a, b\}^*\}$ .
3. Draw a NFA that recognizes the language of balanced parentheses.

Prove or disprove. Assume a fixed alphabet.

4. Every subset of a language accepted by some FSA is also accepted by some FSA.
5. If  $C$  is any set of FSA languages, then  $\cup C$  is a regular language.
6. If  $L$  is accepted by some FSA, then  $\{xy \mid x \in L, y \notin L\}$  is accepted by some FSA..
7. There is some FSA that accepts  $\{xyx^R \mid x, y \in \Sigma^*\}$ .
8. Convert the following NFA to a DFA and prove that your answer is correct:

