Formale Systeme Proseminar

Tasks for Week 16

Task 1 Construct an NFA for the language corresponding to the regular expression

$$(ba)^*(a \cup b)^* aab$$

Task 2 Construct a DFA for the language from Task 1.

Task 3 Construct an NFA for the language given by the regular expression

$$(baa^*)(baa^*)^*(abb^*)$$

Task 4 Construct a DFA for the language from Task 3.

Task 5 Let L be a regular language, $L \subseteq \Sigma^*$. Show that the reversed language of L defined as

$$L^R = \{w \in \Sigma^* \mid w^R \in L\}$$

where reversed words are defined inductively by

$$\varepsilon^R = \varepsilon, (ua)^R = au^R \text{ for } a \in \Sigma, u \in \Sigma^*$$

is regular as well.

Hint: From an automaton for L, construct an automaton for L^R.

Task 6 Construct an NFA for the language given by the regular expression

$$(a \cup b)^* aabab$$

Task 7 Construct a DFA for the language from Task 6.