

CSci 311 : Models of Computation
CSci 500 : Fundamental Concepts of Computing
Fall Semester 2000, Assignment #5
Due 11:00 A.M., Monday, 9 October 2000

Do the following exercises using Section 4.1 concepts:

1. Use the construction method in Theorem 4.1 to find an nfa that accepts $L(bba^*b^*) \cap L(b^*a^*b)$.
2. Show the family of regular languages is closed under symmetric difference. The *symmetric difference* of two sets S_1 and S_2 is defined as $S_1 \ominus S_2 = \{x : x \in S_1 \text{ or } x \in S_2, \text{ but } x \text{ is not in both } S_1 \text{ and } S_2\}$.
3. Let $L_1 = L(b^*abb^*)$ and $L_2 = L(bab^*)$. Find L_1/L_2 .

Do the following exercises from Section 4.2, page 116

- **CSCI 311 students:** Do either exercise 1 or 4
- **CSCI 500 students:** Do both exercises 1 and 4

Do the following exercises from Section 4.3, page 126

- Exercise 4
 - part(a)
 - part (d)
- Exercise 9
 - part (b)
 - part (d)
 - part (e)

Note: In exercise 9, if you answer "regular", show (or describe) a dfa or nfa to accept the language. If you answer "not regular", it is not necessary (but, of course, allowed) to give a formal proof. However, give a sentence or so to justify your answer.