Tutoriaal 4

Rekenaarwetenskap 324
Teoretiese Rekenaarwetenskap

10 Maart 2004

Doel van Tutoriaal

Die volgende onderwerpe word in hierdie tutoriaal aangespreek:

- Pumping Lemma for Regular Languages
- DFA state minimization
- String matching automata
- Introduction to CFL's

Pumping Lemma

Vraag 1

Sipser Exercise 1.17 (b)

Vraag 2

Sipser Exercise 1.17 (c)

Vraag 3

Show that $\{x \in \{a, b, c\}^* | x$ is a palindrome $\}$ is not regular.

Vraag 4

Show that the set PAREN of balanced strings of parentheses over the alphabet $\{ (,) \}$ is not regular. For example (( ) ( )) ( ) is in PAREN but) (( ) not.

DFA state minimization

Vraag 5

Give the automaton obtained by collapsing equivalent states and removing inaccesible states of the automaton with the given transition function. (Use the procedure discussed in class.)

	a	b
→ 1	1	4
2	3	1
3F	4	2
4 F	3	5
5	4	6
6	6	3
7	2	4
8	3	1

String Matching Automata

Vraag 6

Construct the string-matching automaton for the pattern P=aabab and illustrate its operation on the text string T=aaababaabaababaab

CFL's

Vraag 7

Exercise 2.4 (a)-(g) in Sipser.