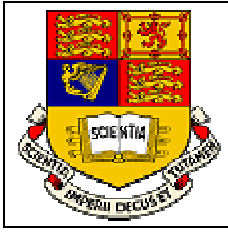

E 2.5 Language Processors

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Language Processors Tutorial Exercises Set 1

Grammars

1. Construct a grammar [use BNF/EBNF syntax] that can generate the language containing all simple arithmetic operations (addition, subtraction, division, multiplication) on single digits using infix notation [example string: (9+(2*3))]. Enforce parentheses around each operation.
2. What type of grammar is your answer to Q1? Why?
3. Show the derivation of ((9+(3*2))-1) and construct the parse tree.
4. Repeat Q1, but ignore the parentheses; can you generate a more restricted-type grammar to generate the language? Show the derivation of 9+3*2-1
5. What is the equivalent regular expression for the language in Q4?
6. Construct a finite state automaton that is able to check whether a given input string belongs to the language of Q4. Trace its execution for 9+3*2-1
7. Similarly with a Push-Down Automaton for Q1. Trace its execution for (9+(3*2))