Homework 2

Posted: 1/25/2011, due: 2/3/2011 before class.

1 (10 pts) Convert the regular expression in question 2.4b to a DFA. (You can either draw directly or build an NFA before converting to DFA.)

2 (20 pts). Convert the NFAs in question 2.5b and 2.5c to DFAs. (If you do not show how you build the DFA tables, it will be difficult to assign you partial credit depending on how far you have done correctly, in case your final result is incorrect. But if you are certain your result is correct, the table is not necessary.)

3 (10 pts). Is the program "print ((id := 3, 3))" valid according to Grammar 3.1? If so, please draw a parse tree for the program. If not, please give the exact reason why there exists no such a parse tree.

4 (10 pts). If we remove the rule number 6 from Grammar 3.1, will the grammar still be ambiguous? If so, please give examples to explain.

5 (10 pts). Please rewrite the first rule in the MiniJava grammar "Program -> ...." such that the language remains the same, but the right hand side will contain no repetitive symbols such as * and +. You can introduce new rules and new non-terminals as long as you don't use * or + in the right hand side.

6 (30 pts) Do question 3.3 a, 3.3 b, 3.3 c, use as few rules as possible.

7 (10 pts) Exercise 3.5 in textbook.