

02140 Languages and Parsing

Programming Exercise 3

Part I: Exercises on lists

The purpose of the following exercises is to make you acquainted with the declaration of simple recursive functions on lists. Aim at short and elegant solutions. In later problems and mandatory assignments, these skills shall be assumed.

Exercises in the databar:

5.2, 5.4, 5.13, 5.16, 6.1(a-d) in HR.

Part II: Programs for DFAs

Exercises in the databar:

1. Give a DFA accepting the language

$$L = \{w \in \{0,1\}^* \mid w \text{ contains no subsequence of the form } 101\}$$

and an SML program accepting the same language following the construction given in the lecture. Can you simplify the program?

2. Extend the program so that the result has the form (b, n) , where b is true iff the input is in L and n is the number of times 0 occurs in the input.

Part III: Exercises at home

5.17 and 6.3 in HR. 6.3 may be a challenging problem. To compare different programming styles and languages, solve e.g 5.13 using Java and reflect over whether your SML solution had any impact on the Java programming style.