## Theory I, Sheet 7

- The solutions should be submitted in English.
- JUST FOR FUN exercises are not mandatory.
- Your solutions should be delivered to the lockbox in building 051 floor 00, or right before the start of the tutorial (June 18, 4:00 p.m.).
- You are allowed to discuss your solutions with each other. Nevertheless, you are required to write down the answers in your own words.


## Exercise 7.1-Knuth-Morris-Pratt algorithm

Let $P=r l r r l r, P^{\prime}=r r l l r r l l$ be patterns and $T=$ lrrrlrrlllrrrlrrlrrllrlrrlrrlr be a text.

1. Compute the prefix function next for the pattern $P$.
2. Compute the prefix function next for the pattern $P^{\prime}$.
3. Use the KMP algorithm for searching the pattern $P$ in text $T$.

## Exercise 7.2-Edit distance

Consider two strings $A=A B R A C A D A B R A$ and $B=C H U P A C A B R A S$.

1. Show the corresponding trace graph for transforming $A$ into $B$. For each node draw only the feasible edges (i.e. edges that lead to the corresponding minimum value of the node).
2. Mark an optimal trace (i.e. an optimal path in the trace graph).
3. Specify the corresponding sequence of edit operations and $D(A, B)$.
