Hans U. Simon
Francesco Aldà

Bochum, October 21st 2013

Homeworks for

Komplexitätstheorie

A. Y. 13/14

Sheet 1

Exercise 1.1 Given the alphabet $\Sigma = \{a, b, \$\}$, design the components of

- a DTM which accepts the language $L = \{w\$w \colon w \in \{a, b\}^*\}$;
- a NTM which accepts the language $L = \{ww \colon w \in \{a, b\}^*\}$.

Exercise 1.2 Design the components of a DTM which shifts one cell to the right an input word $w = a_1 a_2 \cdots a_n$.

Exercise 1.3 Figure 1 displays four consecutive configurations of a 2-tape DTM $\mathcal{M}$. Draw the corresponding configurations of a 1-tape DTM $\mathcal{N}$ which simulates $\mathcal{M}$.

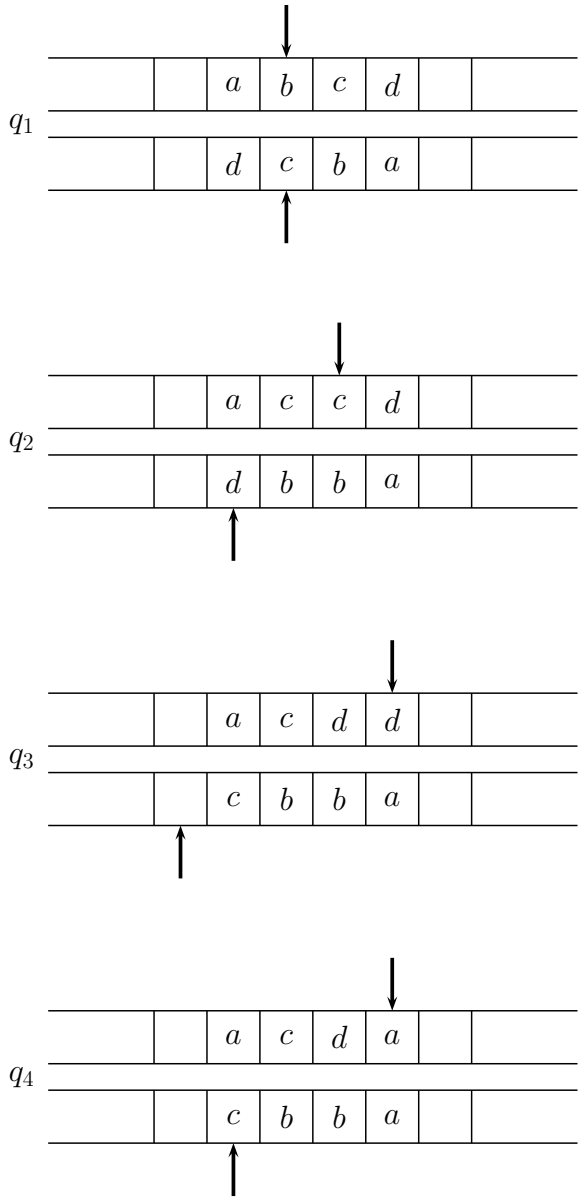

Figure 1: Four consecutive configurations of the 2-tape DTM $\mathcal{M}$