

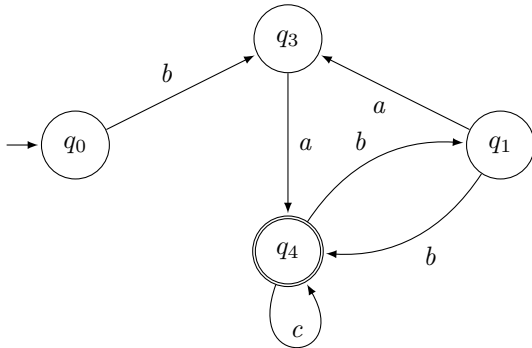
Formal Languages and Automata Theory

Homework 5 (RL + CFL), Due date 28.11.2017

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Exercise 1 (3 points) Find a regular expression for the language recognized by the following automaton (show how you obtain it!)



Exercise 2 (Each part 4 points) Are those CFL also RL? If yes, provide a RE/automaton/RG, if no, provide a proof (use pumping lemma).

- $L = \{d^n e(abc)^n \mid n \geq 0\}$
- $L = \{d^n a^* (b|e)^* c^m \mid n \geq 0, m \leq 3\}$
- $G = \langle \{S, T, D\}, \{a, b, c, d\}, \{S \rightarrow ASB \mid aS \mid Sb, A \rightarrow a, B \rightarrow b\}, S \rangle$
- $G = \langle \{S, T, D\}, \{a, b, c, d\}, \{S \rightarrow aSb \mid T, T \rightarrow cTDD \mid cDD, D \rightarrow d\}, S \rangle$