Automata & Formal Languages

Homework 1 - Deterministic Finite Automata

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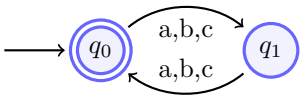
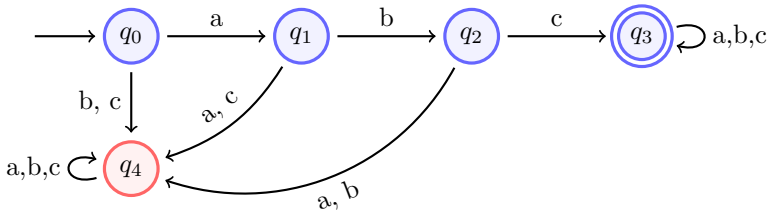
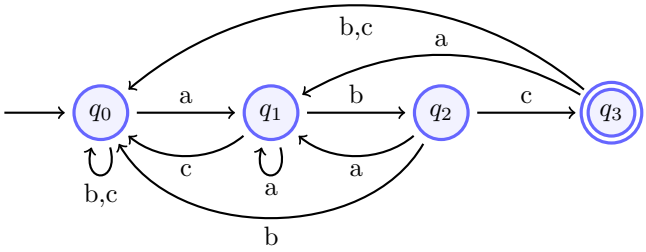
1. $\mathcal{L} = \{w \in \{\mathrm{a}, \mathrm{b}, \mathrm{c}\}^* : (\exists n \in \mathbb{N} : |W| = 2n)\}$



2. $\mathcal{L} = \{w \in \{\mathrm{a}, \mathrm{b}, \mathrm{c}\}^* : \mathrm{abc} \sqsubseteq w\}$

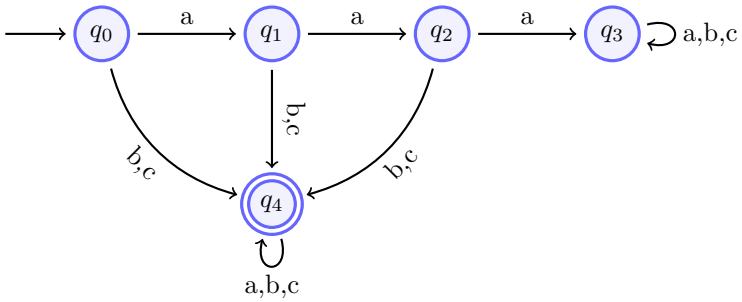


3. $\mathcal{L} = \{w \in \{\mathrm{a}, \mathrm{b}, \mathrm{c}\}^* : \mathrm{abc} \sqsupseteq w\}$

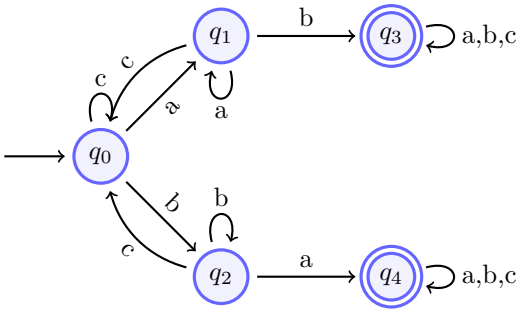


For this language, the word "aaaabc" belongs in the language, but "aaa" does not.

4. $\mathcal{L} = \{w \in \{\mathrm{a}, \mathrm{b}, \mathrm{c}\}^* : \mathrm{aaa} \not\sqsubseteq w\}$



5. $\mathcal{L} = \{w \in \{\mathrm{a}, \mathrm{b}, \mathrm{c}\}^* : (\exists u, v \in \{\mathrm{a}, \mathrm{b}, \mathrm{c}\}^* : w = u\mathrm{ab}v \vee w = u\mathrm{ba}v)\}$



6. $\mathcal{L} = \{\mathrm{abba}\}$ where $\Sigma = \{\mathrm{a}, \mathrm{b}, \mathrm{c}\}$