Recap part I: Regular Languages

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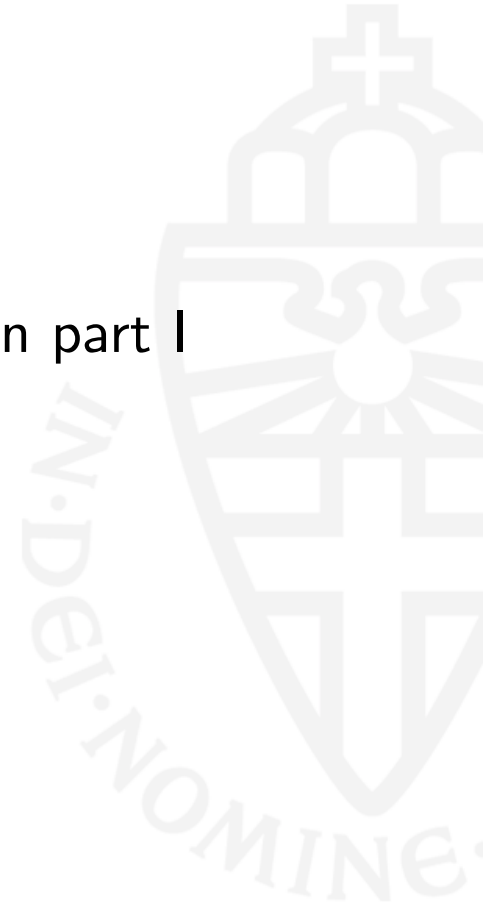
Organisational

Today:

- Hour 1 : recap of part I of FLGA
- Hour 2 : discussion of assignment4
- Hours 3-4 (start at 10:30!): half-way test-exam on part I
- Locations for the test-exam:
  - HG00.310 (students [A–G])
  - HG00.206 (students [H–R])
  - HG00.065 (students [S–W])



Typical questions (1)

Consider $L = \{w \mid |w|_b \geq 1\}$.

- Give a DFA accepting L.
- Is it the case that $L^* = L$?

Consider also $L' = \mathcal{L}((a+b)^*(ab^*b+b)aa^*)$.

- Do we have $L' = L$? $L' \subseteq L$? $L \subseteq L'$?
- Give an NFA M accepting L'.
- Determinize M to get a DFA accepting L'.

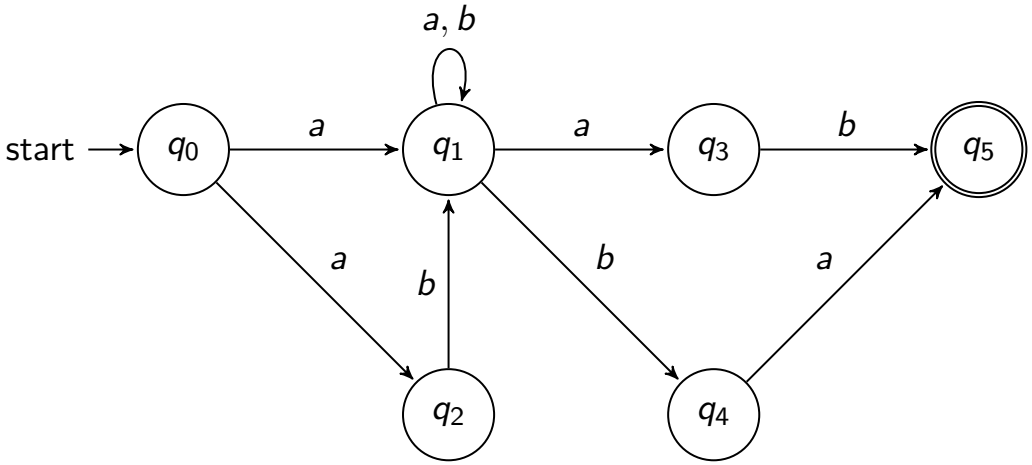
Consider

$$\begin{aligned} L_1 &= \{w \mid |w|_b \text{ is odd}\} \\ L_2 &= \{w \mid |w|_b \text{ is even}\} \end{aligned}$$

- Do we have $L_1 L_2 = L_2 L_1$?
- Do we have $L_1 L_1 = L_2$?

Typical questions (2)

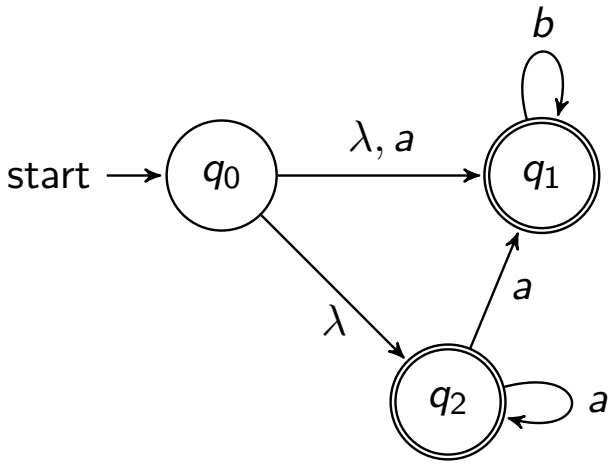
(From LnA) Consider the following NFA M



- What is the length of the shortest accepted word?
- Compute $\delta^*(q_1, ab)$.
- Compute $\delta^*(q_0, abab)$.
- Do we have $\mathcal{L}(aaa^*b) \subset \mathcal{L}(M)$?
- What is the language accepted by M?
- Give a regular expression e such that $\mathcal{L}(e) = \mathcal{L}(M)$.

Typical questions (2)

(From LnA) Consider the following NFA M



- What is the λ-closure of q_0?
- Compute $\delta^*(q_0, a)$, $\delta^*(q_0, aa)$, and $\delta^*(q_0, aba)$.
- Give a regular expression e such that $\mathcal{L}(e) = \mathcal{L}(M)$.
- Compute a DFA that accepts the same language as M.