Thompson's construction

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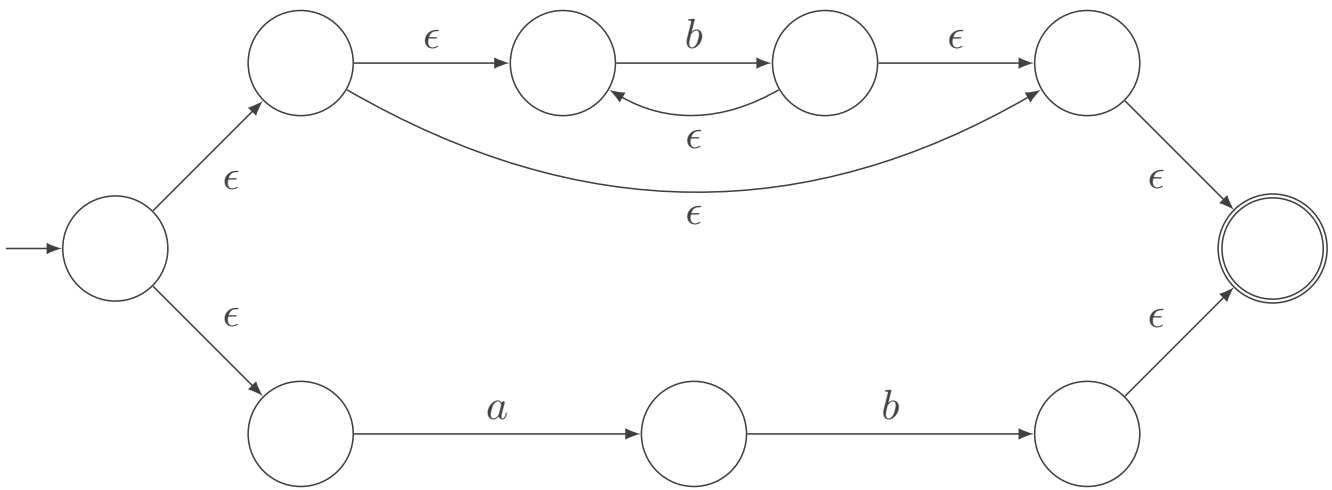
Thompson's construction

Algorithm to construct an Non-deterministic Finite Automaton (NFA) from a regular expression.

NFA will recognise the same language as the regular expression.

Example: $ab|b*$



Essential data

Recall the definition of an NFA.

- Q is a finite set of *states*,
- Σ is a finite set called the *alphabet*,
- δ is the *transition function* $(Q \times \Sigma_\epsilon \to \mathcal{P}(Q))$,
- q_0 is the *start state* $(\in Q)$, and
- F is the set of *accept states* $(\subseteq Q)$.

Note

You only need to know δ, q_0 and F, and you can always stipulate that $|F| = 1$ by using ϵ arrows.