ALBERT-LUDWIGS-
UNIVERSITÄT FREIBURG

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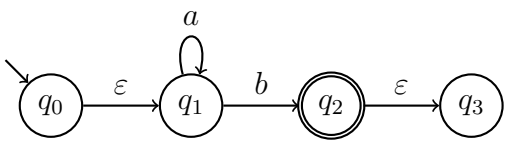
2. Presence Exercise Sheet for the Lecture
Computer Science Theory

Exercise 1: Automata conversions

(a) Convert the following ε-NFA to an NFA.



(b) Remove all redundant states (i.e., unreachable states and sink states) from the NFA resulting from (a).

(c) Convert the NFA resulting from (b) to a DFA.

Exercise 2: Context-free grammars

Consider the alphabet $T = \{\rangle, \langle, a\}$. Construct context-free grammars which generate

(a) $L = \{\langle^n a^m \rangle^n \mid m, n \in \mathbb{N}, m > 0\}$

(b) $L = \{\langle^n a^m \rangle^n \mid m, n \in \mathbb{N}, m \text{ is odd}\}$.