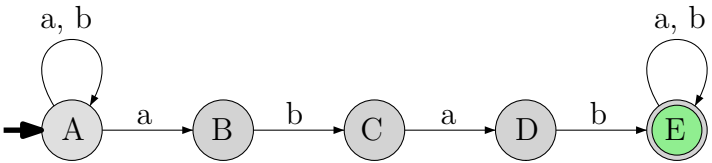
7.3
Converting regular languages into CFL

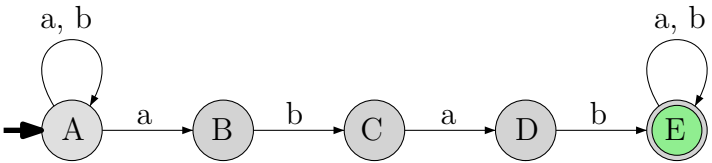
Converting regular languages into CFL

$M = (Q, \Sigma, \delta, s, A)$: DFA for regular language L.

$$G = \Big(\overbrace{Q}^{\text{Variables}}, \overbrace{\Sigma}^{\text{Terminals}}, \overbrace{\{q \to a\delta(q,a) \mid q \in Q, a \in \Sigma\} \cup \{q \to \varepsilon \mid q \in A\}}^{\text{Productions}}, \overbrace{s}^{\text{Start var}} \Big)$$



Conversion continued...



$$G = \left(\{A, B, C, D, E\}, \{a, b\}, \left\{ \begin{array}{c} A \to aA, A \to bA, A \to aB, \\ B \to bC, \\ C \to aD, \\ D \to bE, \\ E \to aE, E \to bE, E \to \varepsilon \end{array} \right\}, A \right)$$

The result...

Lemma

*For an regular language **L**, there is a context-free grammar (CFG) that generates it.*

THE END

...

(for now)