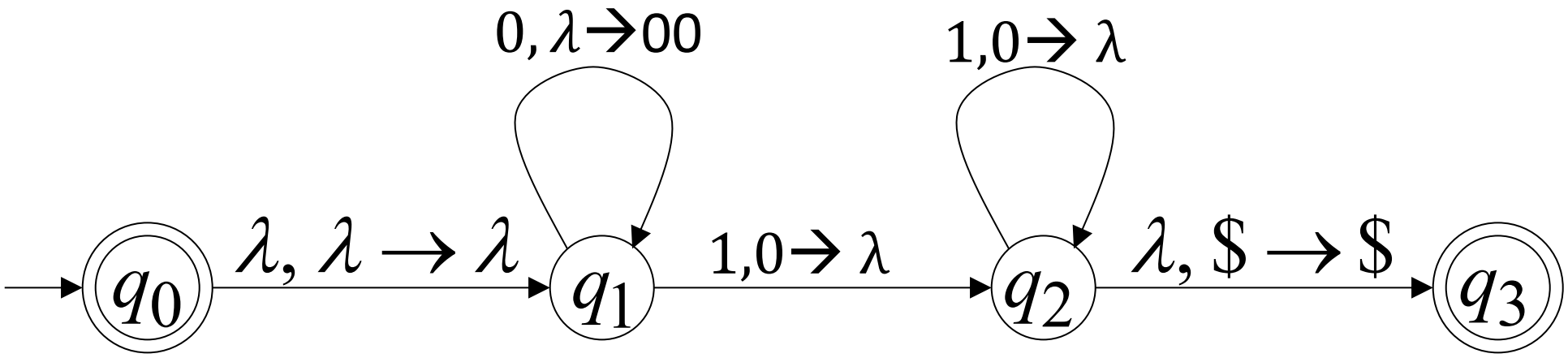
Tutorial #5

Push Down Automata (PDA)

Exercise 1

- Construct a PDA to accept the following languages:

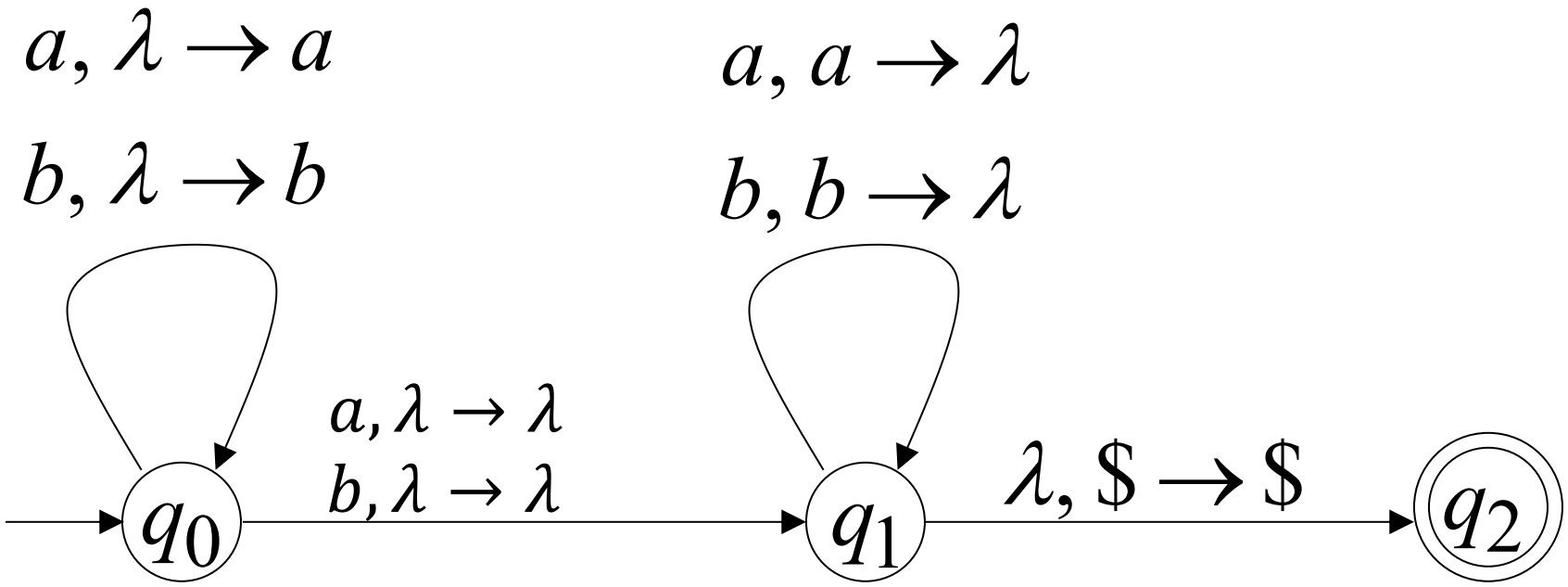
1. L={$0^n1^{2n}|n\geq0$}



Exercise 1

- Construct a PDA to accept the following languages:

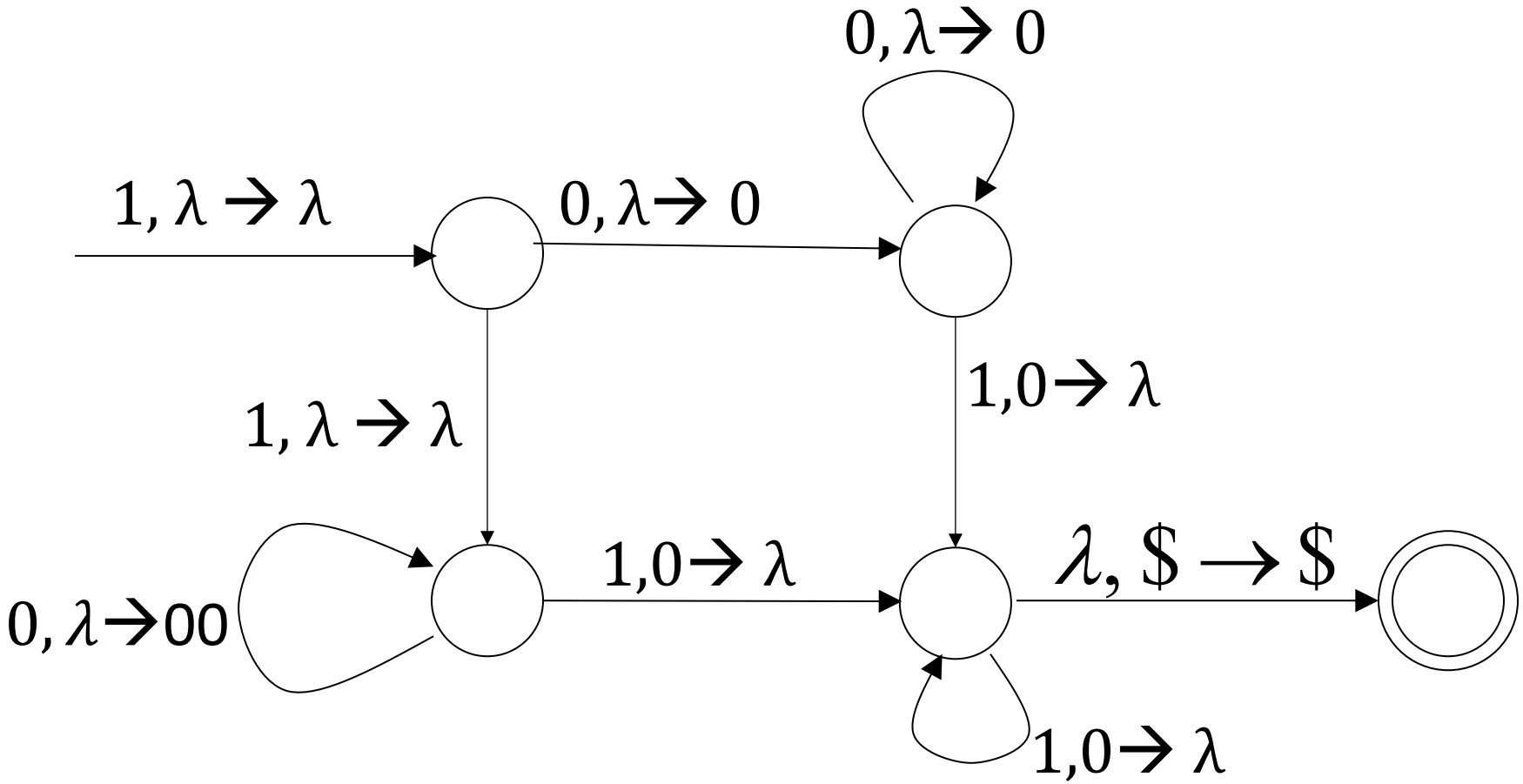
2. $L = \{w\sigma w^R \mid w \in \{a,b\}^*, \sigma \in \{a,b\}\}$



Exercise 1

- Construct a PDA to accept the following languages:

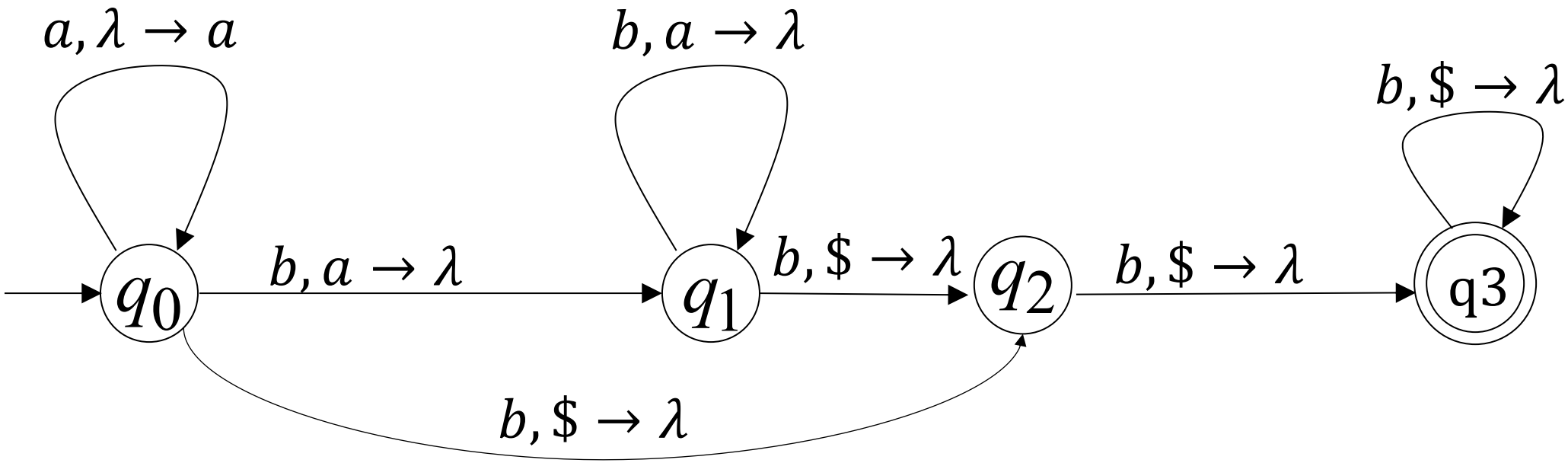
3. L={$10^n1^n | n>0$}∪{$110^n1^{2n} | n>0$}



Exercise 1

- Construct a PDA to accept the following languages:

4. $L=\{a^n b^m \mid m \geq n+2\}$

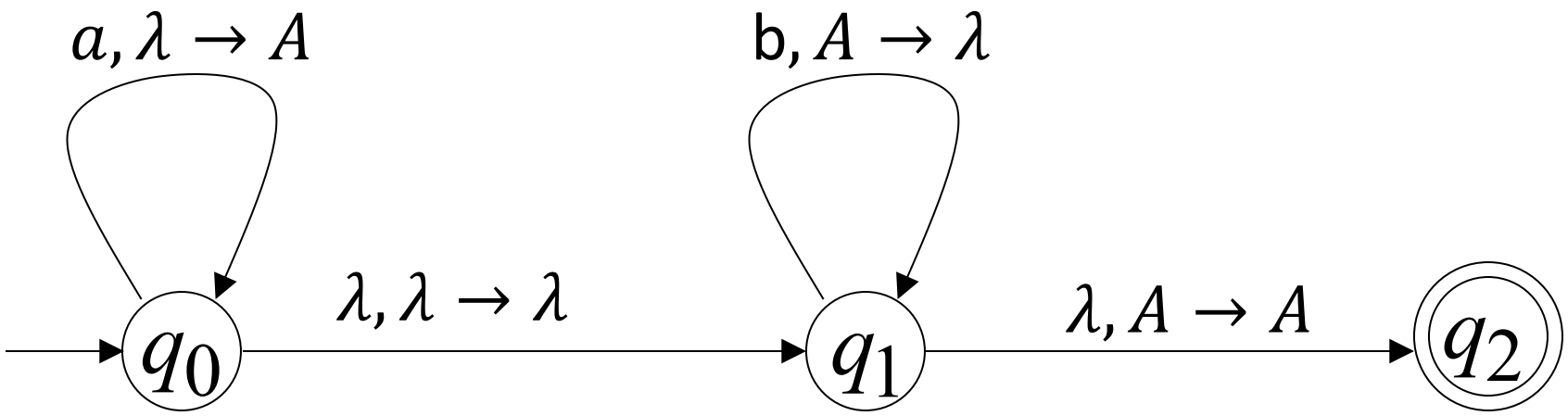


Exercise 2

- Consider the following formal definition of a push-down automata (PDA):
  P = (Q,Σ,Γ,δ,q0,$,F), where Q = {q0,q1,q2}, Σ = {a,b}, Γ = {A}, F = {q2} and δ is given as follows.

$\delta(q0, a, \lambda) = (q0, A)$
$\delta(q0, \lambda, \lambda) = (q1, \lambda)$
$\delta(q1, b, A) = (q1, \lambda)$
$\delta(q1, \lambda, A) = (q2, A)$
$\delta(q, x, y) = \phi$ in all other cases ($x \in \Sigma$ and $y \in \Gamma$).

$L=\{a^m b^n \mid m>n>=0\}$



Exercise 3

- Construct the PDA corresponding to the following grammar:
- $\boldsymbol{S \rightarrow aABB|aAA}$
- $\boldsymbol{A \rightarrow aBB|a}$
- $\boldsymbol{B \rightarrow bBB|A}$