Example 2.16 I

$$\{a^i b^j c^k \mid i = j \text{ or } i = k\}$$

- Idea: push a^i into stack

  But should we check b or c ?
- Need nondeterminism
- Pushdown automata may be nondeterministic

Example 2.16 II

- Recall δ was defined as

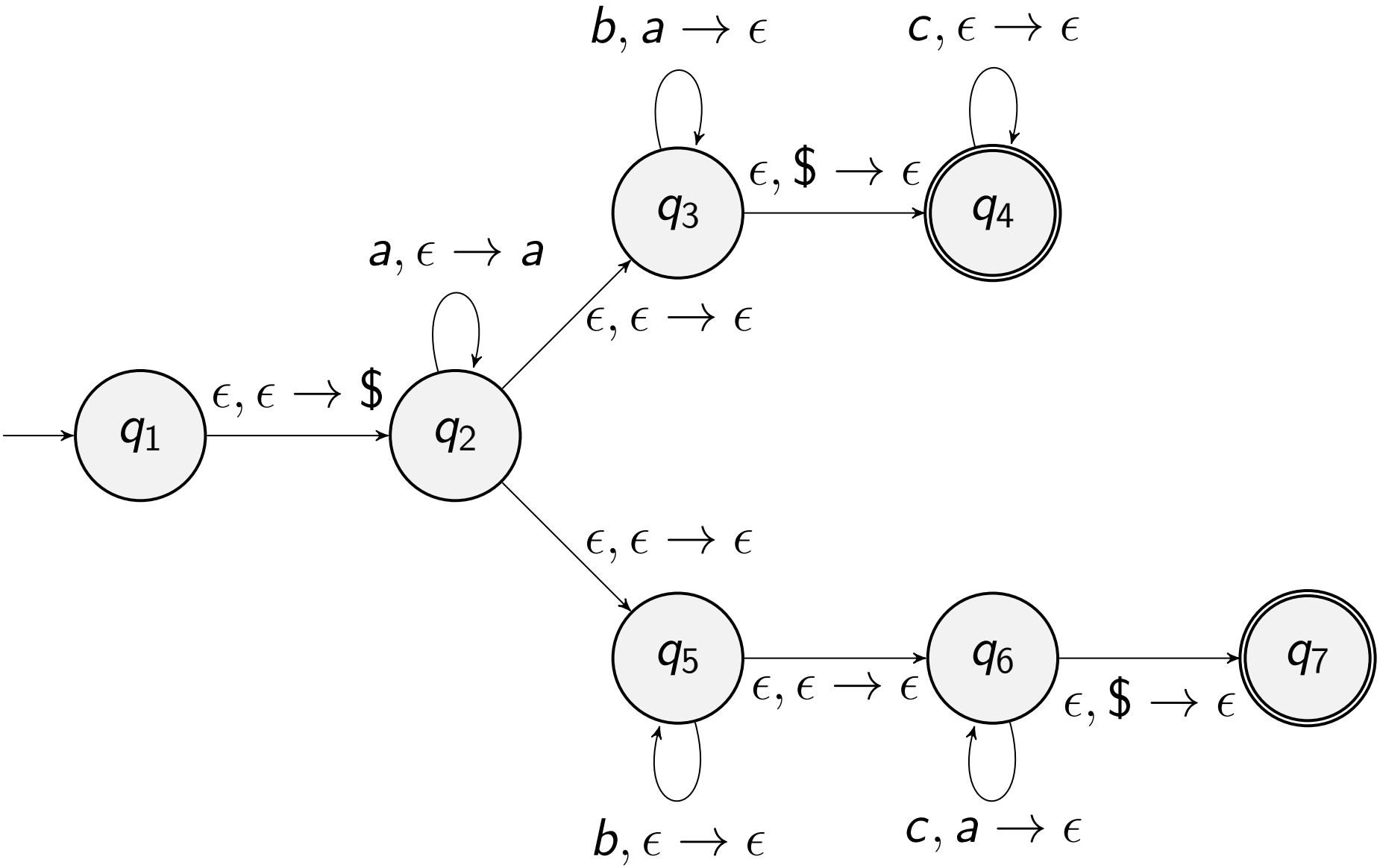
$$Q \times \Sigma_\epsilon \times \Gamma_\epsilon \to P(Q \times \Gamma_\epsilon)$$

  We see the power set $P(Q \times \Gamma_\epsilon)$
- Fig 2.17

  The upper part checks if $i = j$

  The lower part checks if $i = k$

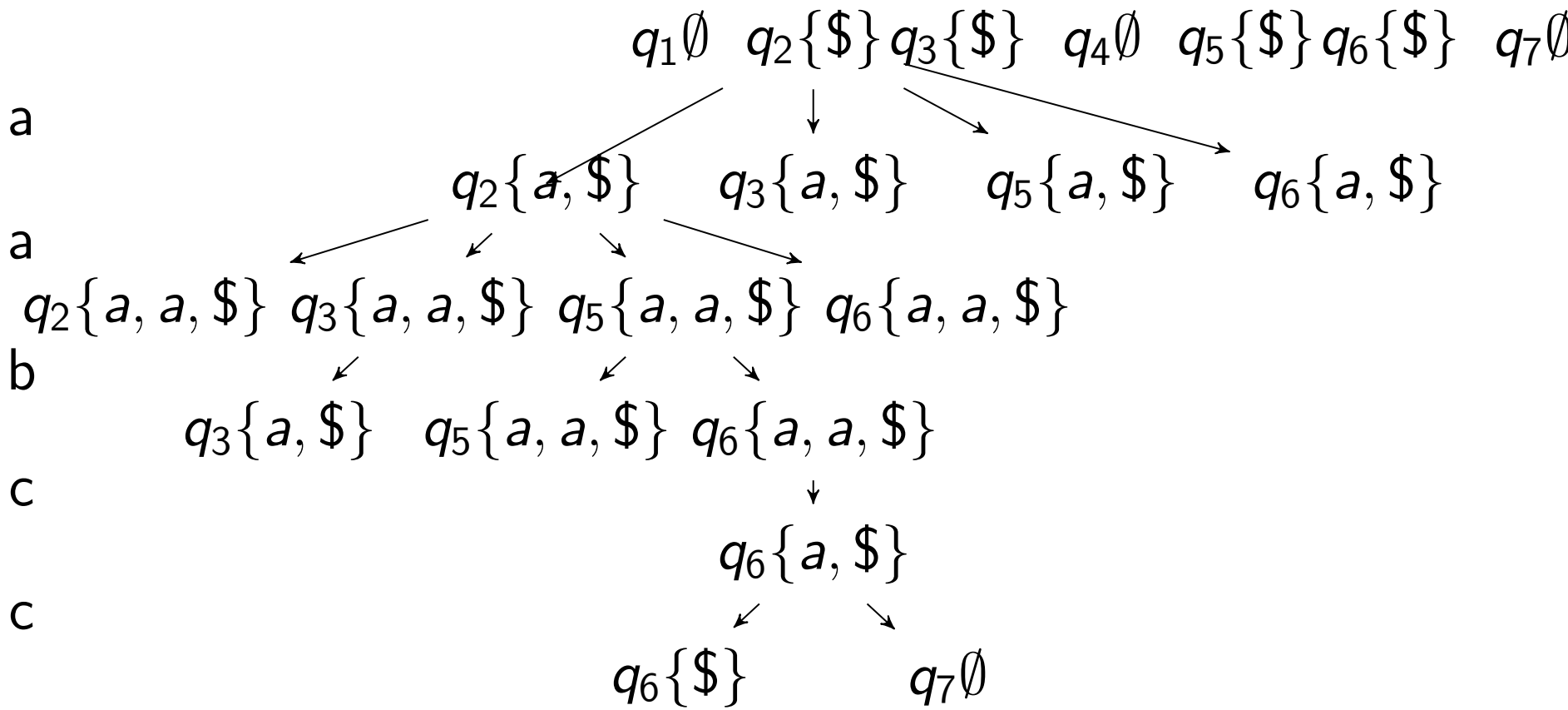
Example 2.16 III



Running a PDA I

- Input a^2bc^2
- The way is similar to how we run an NFA

Running a PDA II



Example 2.18 I

- $\{ww^R \mid w \in \{0,1\}^*\}$

  w^R: reverse
- Approach:

  symbols pushed to stack

  nondeterministically guess middle is reached
- fig 2.19

Example 2.18 II