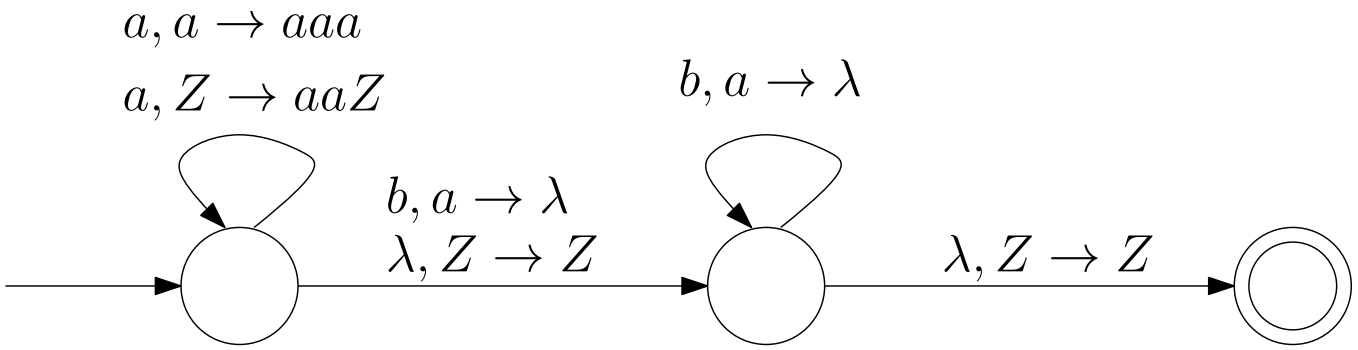
Quiz 7

1. Every context-free language can be recognized by an NPDA that has only 3 states

   (a) True

   (b) False

2. What is the language that is accepted by the following NPDA? Z is bottom of the stack symbol.



(a) $\{a^n b^{2n} : n \geq 0\}$

(b) $\{a^{2n} b^n : n \geq 0\}$

(c) $\{a^n b^{3n} : n \geq 0\}$

(d) $\{a^{3n} b^n : n \geq 0\}$

3. I want to remove all λ- and unit-productions from G. Then I should

   (a) First remove unit productions then remove λ-productions.

   (b) First remove λ-productions then remove unit-productions.

   (c) First you have to remove useless variables, then remove unit-productions, then remove λ-productions.

   (d) The order of operations doesn't matter.

4. How many of the following rules are in the Chomsky Normal Form (capital letters are variables, lower case letters are terminals)?

$$A \to aAB$$
$$A \to ab$$
$$A \to c$$
$$A \to CB$$
$$A \to aAb$$

(a) 1

(b) 2

(c) 3

(d) 4

(e) 5

5. How many of the following rules are in the Greibach Normal Form (capital letters are variables, lower case letters are terminals)?

$$A \to aAB$$
$$A \to ab$$
$$A \to c$$
$$A \to CB$$
$$A \to aAb$$

(a) 1

(b) 2

(c) 3

(d) 4

(e) 5