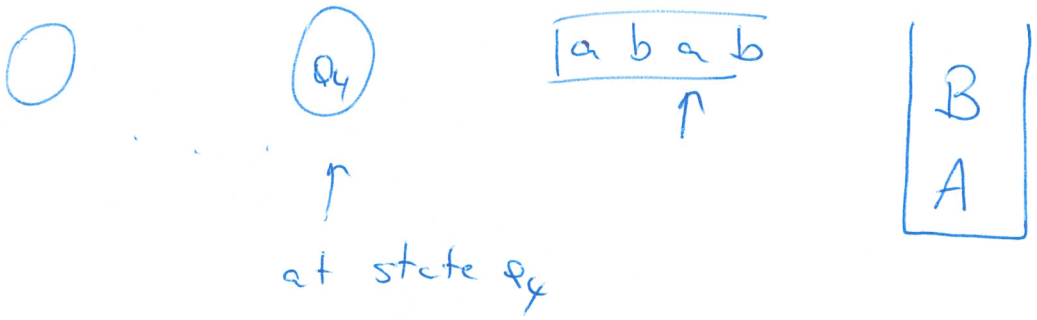
CS3311
Nov 28 2012
Wednesday (1)

Averages:
exam 1: 80.54 2: 83.84 3: 86.45

Last time: PDA

Configuration of a PDA is represented by a triple $[q_i, w, \alpha]$

- snapshot
- α: stack contents
- w: unprocessed input
- q_i: machine state.



$[q_4, ab, BA]$
↑ top on the left

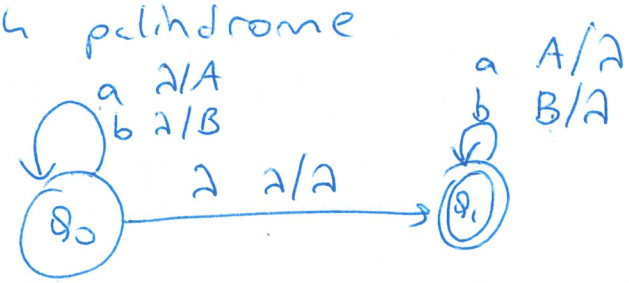
Definition 7.1.2 Let $M = (Q, \Sigma, \Gamma, \delta, q_0, F)$ be a PDA
A string $w \in \Sigma^*$ is accepted by M if there is a computation

$$[q_0, w, \lambda] \vdash^* [q_i, \lambda, \lambda]$$

- $q_i \in F$
- the entire input must be processed for acceptance
- the stack has to be empty for acceptance

This means there has to be a series of transitions from the starting configuration to an accepting configuration.

even length palindrome



abba

$[q_0, abba, \lambda]$

$[q_0, bba, A]$ $[q_1, abba, \lambda]$

$[q_d \dots]$ goes to dead state.

$[q_0, ba, BA]$ $[q_1, bba, A]$

$[q_d \dots]$

$[q_0, a, BBA]$ $[q_1, ba, BA]$

accepts

PDA → CFG

←

~~3311~~ 3311

4811

5811

5311 grad theory course

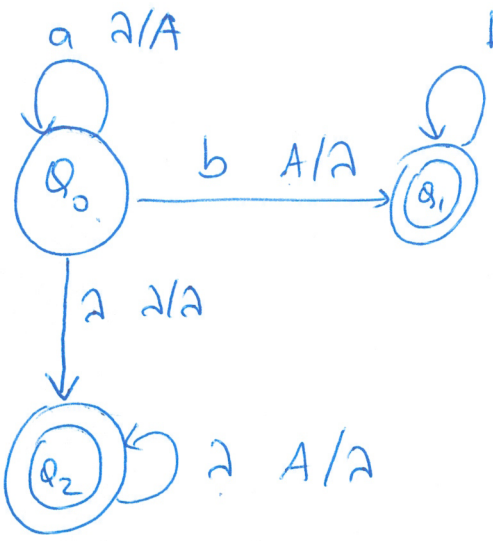
DFAs are models of regular languages.

PDAs are models of context free languages.

Not every nondeterministic PDA has an equivalent deterministic PDA.

$a^i b^i$

$L = \{ a^i \mid i \geq 0 \} \cup \{ a^i b^i \mid i \geq 0 \}$



} i b's are needed

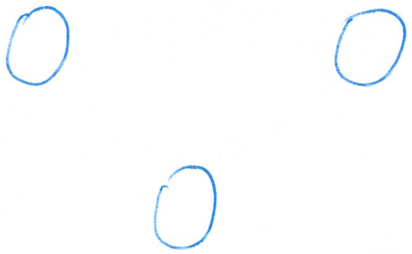
} no b's are needed

aaa | A A A | $[q_2, \lambda, \lambda]$

aabb | A A | bb | will fail at the lower path

| A λ | bb | A | b | λ | λ

q_1 q_1

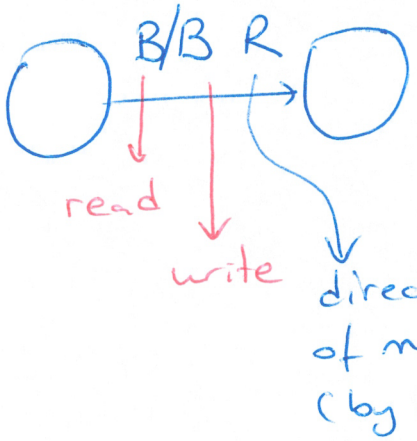


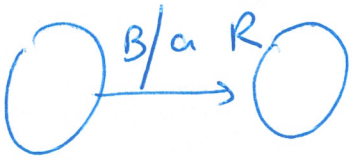
finite state machine

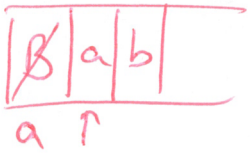
blank tape character

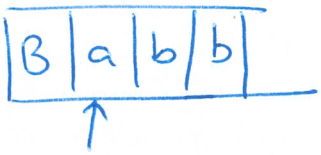
$B \notin \Sigma$

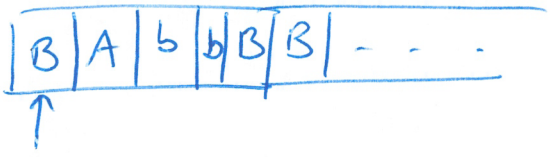
the input is always finite









B/B R

a/A L