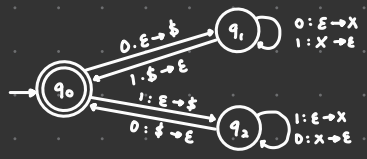
Context Free Languages 3 of 3

Definition: Deterministic PDA (DPDA)

A PDA for which on every input, there's exactly one computation

Ex 1: (8.5 on pg. 253) (of a DPDA)

$L_1 = \{ x \in \{0,1\}^* : \#_0(x) = \#_1(x) \}$



Ex 2: Of a non-deterministic / standard PDA for L_1

Input: 01

push X

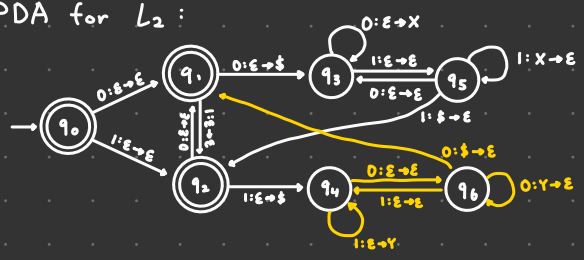
push Y or pop X

reject accept

⇒ 01 is accepted

Ex 3: $L_2 = \{ x \in (0,1)^* : \#_{00}(x) = \#_{11}(x) \}$

A DPDA for L_2:



A Standard PDA for L_2:

Theorem: The BIG Result Part 2

Let L be a language. Then:

$L = L(G)$ for some CFG G iff $L = L(M)$ for some PDA M

There are two variations of a PDA: Accept-by-state / Accept-by-stack / Two stack PDA.