Feb 24

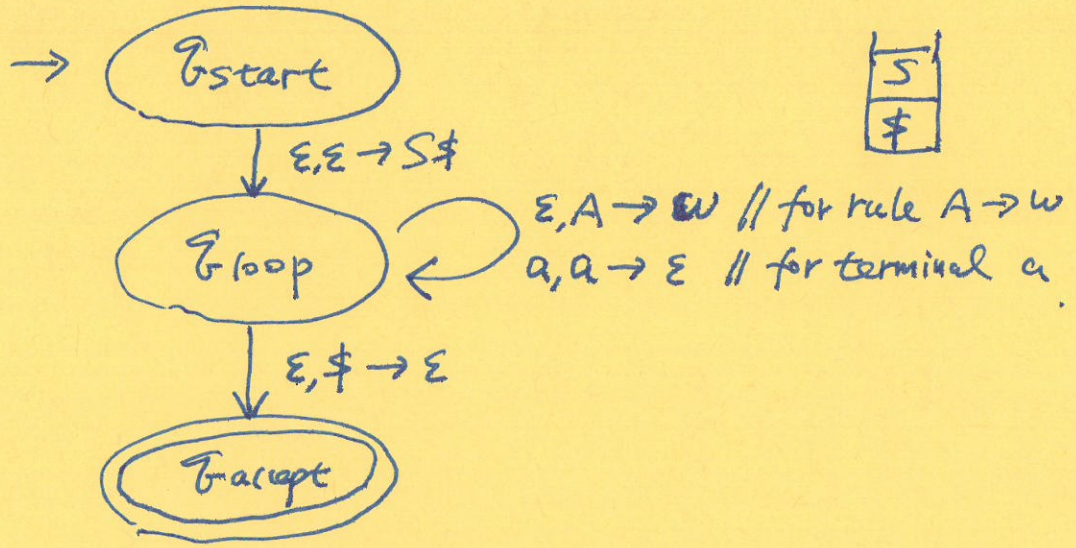
Equivalence between PDA and CFL.

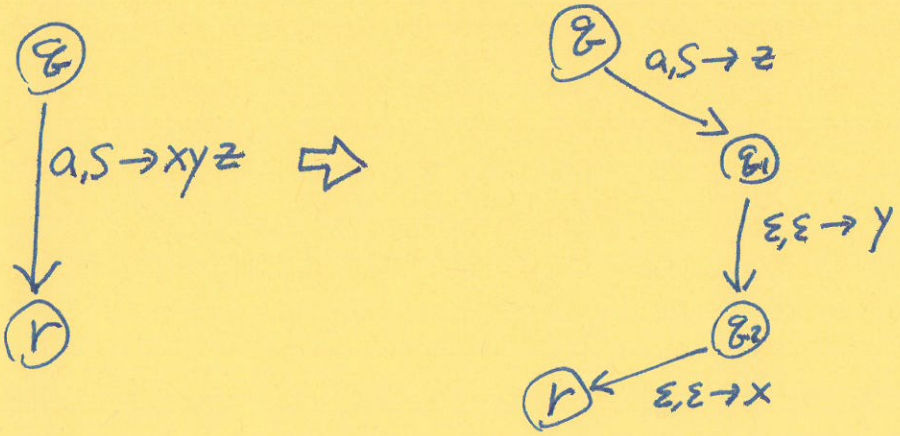
Theorem 2.20: A language is context-free if and only if some PDA recognizes it.

"only if part"

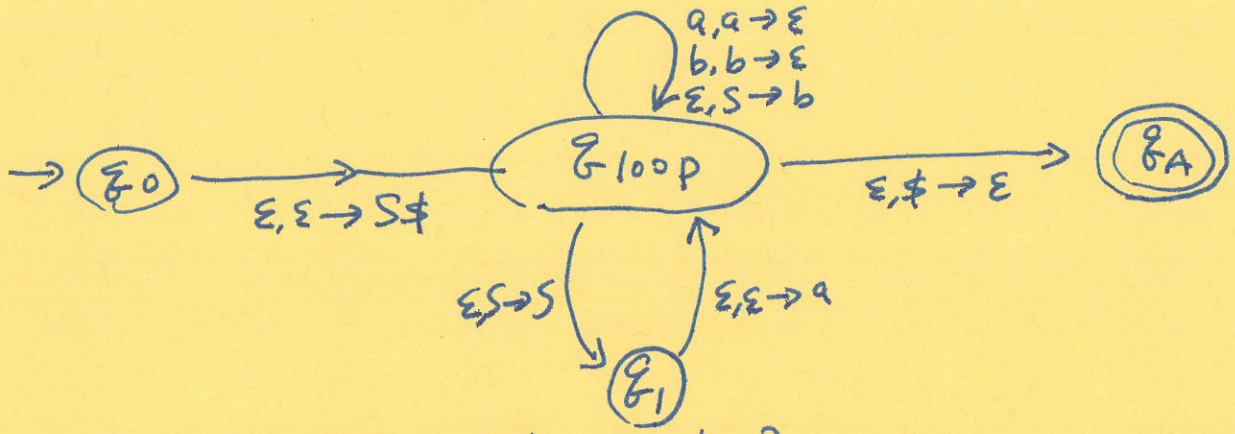
Lemma 2.21: If a language is CF, then some PDA recognizes it.

Some CFG ⇨ PDA (somehow deterministic)
(non-deterministic)

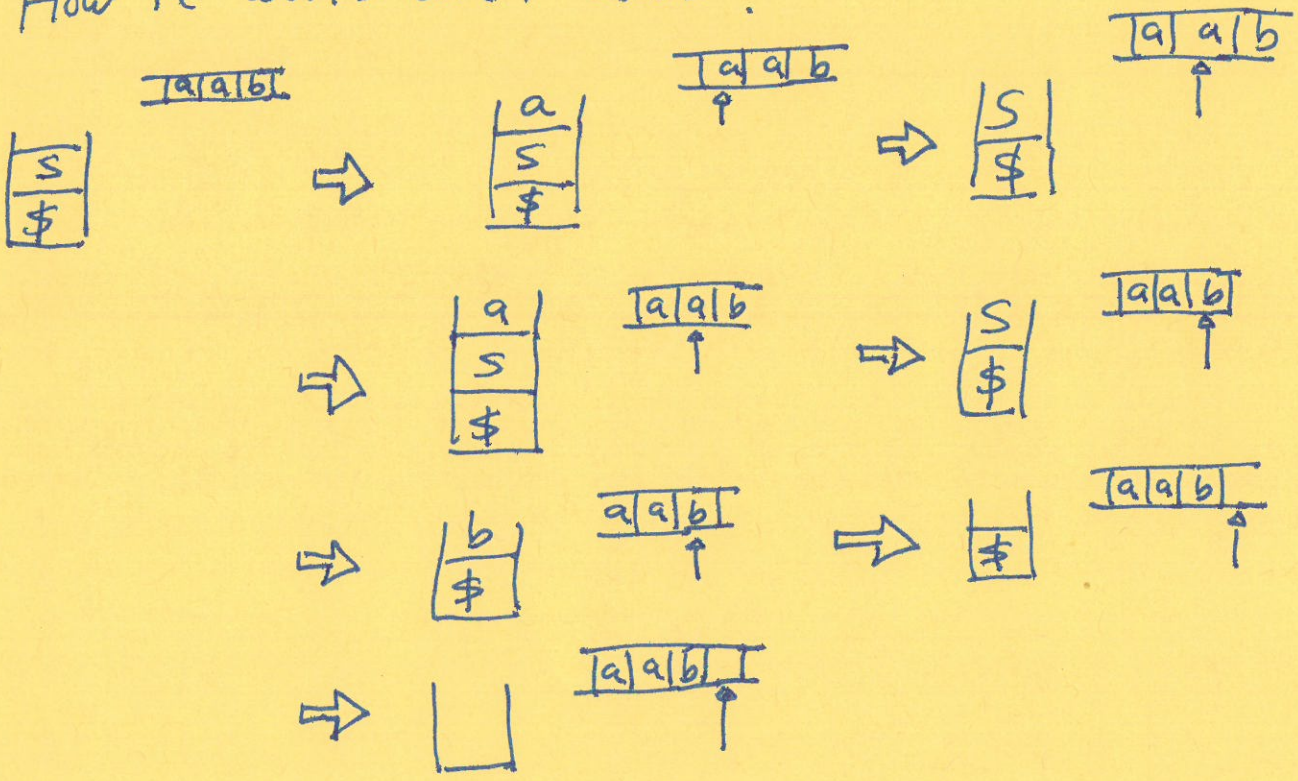




Ex. $S \to aS \mid b$



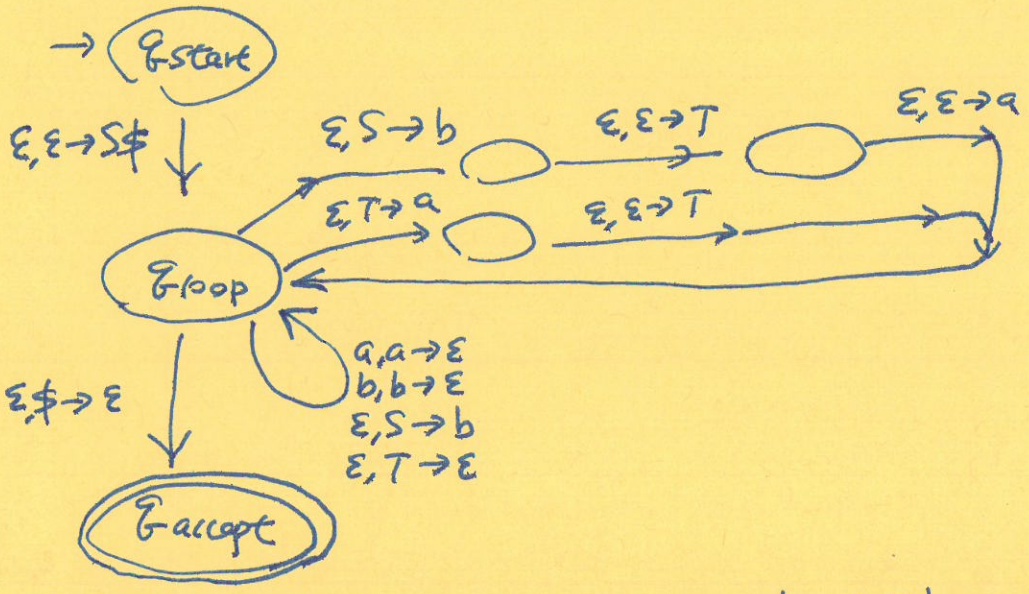
How it works with aab ?



Example Convert CFG G to PDA.

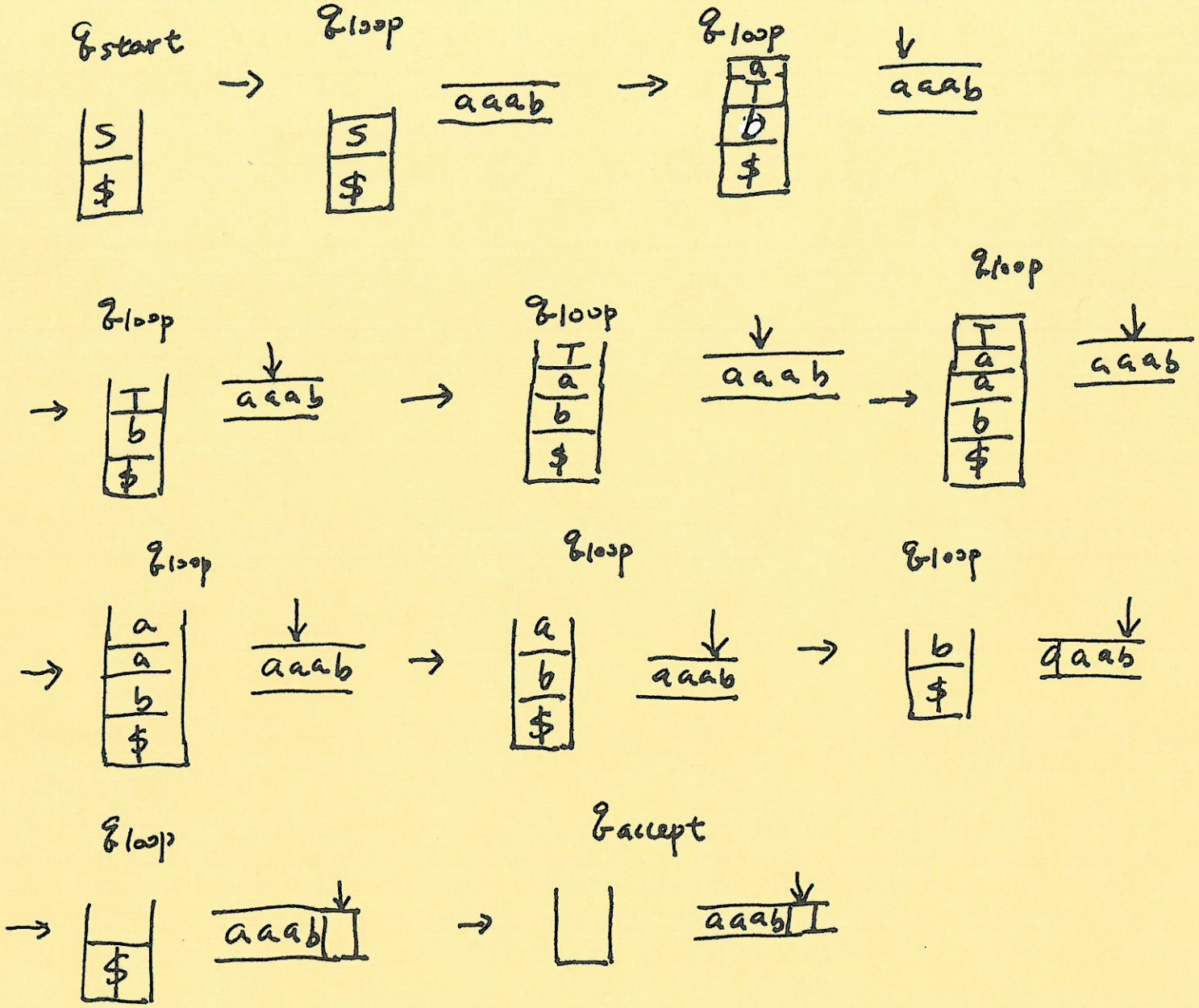
$S \to aTb \mid b$

$T \to Ta \mid \varepsilon$



How do you process aaab using this PDA?

– Take-home exercise.



$$S \Rightarrow a\underline{T}b \Rightarrow a\underline{T}ab \Rightarrow a\underline{T}aab \Rightarrow aaab$$