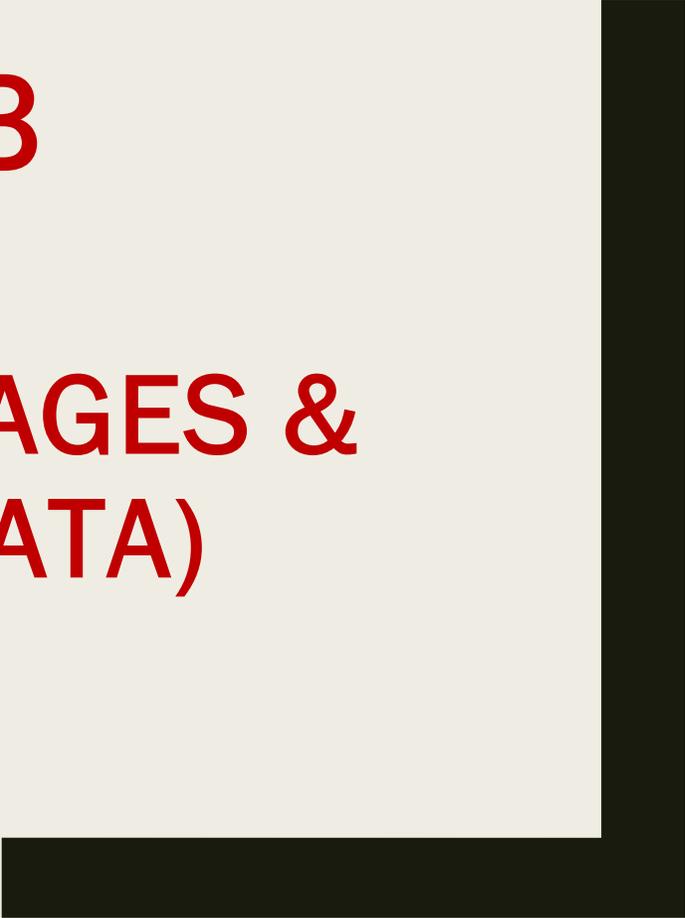


TUTORIAL – 2B

(CONTEXT-FREE LANGUAGES &
PUSH-DOWN AUTOMATA)



Problem-1

Design PDAs for the following context-free languages?

- $L_1 = \{ a^i b^j c^k \mid i, j, k \geq 0, \text{ and } i=j \text{ or } i=k \}$
- $L_2 = \{ a^i b^j c^k \mid i, j, k \geq 0, \text{ and } i+j = k \}$
- $L_3 = \{ a^m b^n \mid m, n \geq 0, m = 2n \}$
- $L_4 = \{ a^m b^n \mid m, n \geq 0, m \neq 2n \}$

Problem-2

Given the following languages over the alphabet {a, b}, design PDAs that accept by empty stack (separate PDA for each one).

- $L = (a+b)^*b$
- $L' = \text{all palindromes over } \{a,b\}$

Can you draw one-state PDAs separately for L and L'?

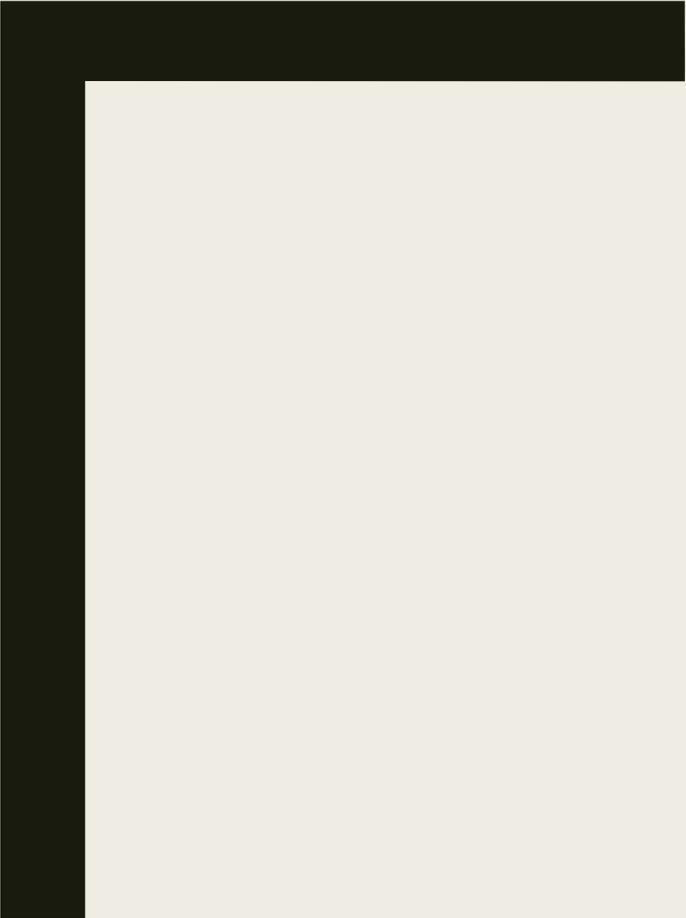
Problem-3

Consider again the following regular language,
 $L = (a+b)^*b$, over alphabet $\{a, b\}$.

Can you directly present the left linear and the right linear grammar?

Also try the following:

Draw a DFA accepting L and then derive a Right Linear Grammar for L . Can you derive the Left Linear Grammar from the same DFA (or modifying it by some trick)?



THANK YOU !