

Practical Series N°2

Exercise 1

Let $A = \{a, b\}$ be an alphabet and L is a language defined on A , Write a C program that reads a word $u \in L$ then displays its prefixes and suffixes.

Exercise2

Using the JFLAP software classify each grammar according to Chomsky hierarchy(type):

1- $G = (N, T, S, P); N = \{S, A\}; T = \{a, b, c\}, P = (S \rightarrow abcA | Aabc; A \rightarrow \varepsilon; Aa \rightarrow Sa; cA \rightarrow cS)$

2 - $G = (N, T, S, P); N = \{S\}; T = \{0, 1\}, P = (S \rightarrow 0 | 1 | 1S)$

3 - $G = (N, T, S, P); N = \{S\}; T = \{a, *, +\}, P = (S \rightarrow a | * SS | + SS)$

- Derive in one step then in two steps does the word belong to $L(G)$ (G1)
- Give the derivation tree of the word ***abcabcabc***.(G1)
- Give manually words belong to G2 and G3, and then check it by JFLAP.

Remark: Use Brute force parse, multiple brute force parse, derivation table, no inverted tree,...

Exercise3

- Give a context –free grammar that generates $L(G)$

$$L(G) = \{u \in \{a, b\}^+ \text{ where } |u|_a > |u|_b \}$$

- Check your grammar on the word *baaba*