

* GLC e Symp

GLCs:

a) ~~$\{a^n b^n / n \geq 0\}$~~

b) $\{0^n 1^{2n} 0^m / m \geq 0, n \geq 0\}$

$V = \{$

$T = \{0, 1\}$

$P = \{S \rightarrow AB$

$A \rightarrow 0A11 / \lambda$

$B \rightarrow 0B1 / \lambda \}$

$S = S$

c) $\{W \in \{a, b\}^+ / |W|_a = |W|_b\}$

$V = \{$

$T = \{$

$P = \{S \rightarrow aA / bB /$

$A \rightarrow bAA / aS / a$

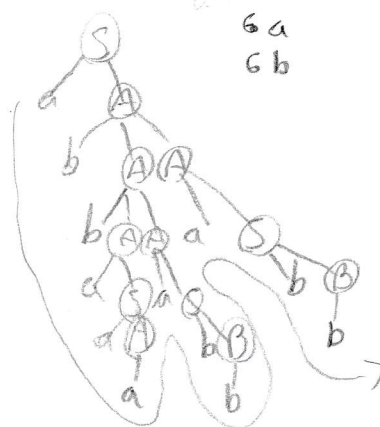
$B \rightarrow aBB / bS / b \}$

$S = S$

abbaaaabbaabb

6a

6b



d) $\{a^m b^n c^m / m \geq 1, n \geq 1\}$

$V = \{$

$T = \{$

$P = \{S \rightarrow aAc$

$A \rightarrow aAc / bB$

$B \rightarrow bB / \lambda \}$

$S = S$

e) $\{a^m b^k c^{m+k} / m, k \geq 0\}$

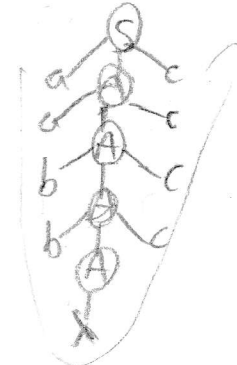
$V = \{$

$T = \{$

$P = \{S \rightarrow aSc / bBc / \lambda$

$A \rightarrow bAc / \lambda \}$

aabbcccc



f) $\{a^m b^{m+k} c^k / m, k \geq 0\}$

$V = \{$

$T = \{$

$P = \{S \rightarrow AB$

$A \rightarrow aAb / \lambda$

$B \rightarrow bBc / \lambda \}$

g) $\{a^m b^k / m \leq k \leq 3m\}$

$V = \{$

$T = \{a, b\}$

$P = \{S \rightarrow aAb / aBb / Bb / B / Aa / A / \lambda$

$A \rightarrow aBb$

$B \rightarrow ab / b \}$

$S = S$

a a a p b b
o a b b
o b b
a b
b
λ

h) $\{a^{m+m+1} b^{2m} c^{3m} / m, m \geq 0\}$

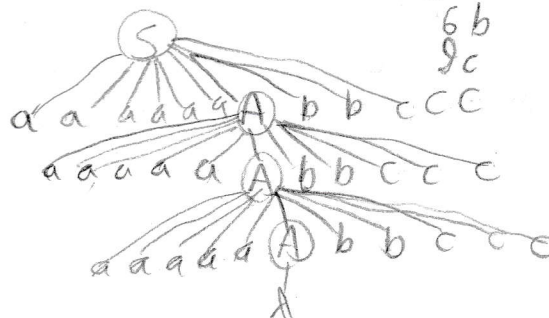
$V = \{$

$T = \{a, b, c\}$

$P = \{S \rightarrow aaaaaaAbbbccc / \lambda$

$A \rightarrow aaaaaaAbbbccc / \lambda$

aaaaaaabbbccc



16a

6b

9c

i) $\{a^m b^{3m+2k} c^{3k} / m, k \geq 0\}$

$V = \{$

$T = \{a, b, c\}$

$P = \{S \rightarrow AB$

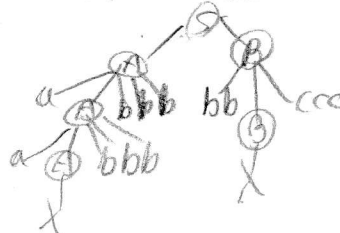
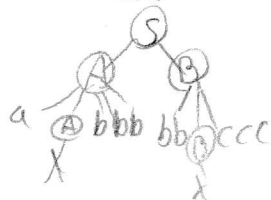
$A \rightarrow aAbbb / \lambda$

$B \rightarrow bbbBccc / \lambda$

$S = S$

abbbbbbccc

aaabbbbbbccc



1) $\{a^m b^m c^k / m = n \text{ ou } m \neq k\}$

$V = \{$

$T = \{a, b, c\}$

$P = \{S \rightarrow AB / X / Y\}$

$A \rightarrow aAb / \lambda$

$B \rightarrow cB / \lambda$

$X \rightarrow aY / cZ$

$Y \rightarrow \dots$



~~X~~ não resolvida

2) Seja a gramática G :

$P \rightarrow AB / aAB$

$A \rightarrow a / Aa$

$B \rightarrow b$

a) Que linguagem é gerada por G ? $ab \ aob$

$L = \{a^m b^m / m=1, m \geq 2 \text{ ou } m=2\}$

b) Mostre que G é ambígua.

G pode aceitar palavras com qualquer qtd. $m > 0$ de a , ou, pode ter apenas 2 a , e número b , com quantidade $m=1$, em ambas as cases.

c) $V = \{P, A\}$

$T = \{a, b\}$

$P \rightarrow AB$

$A \rightarrow a / Aa$

$B \rightarrow b$

3) Seja a gramática G :

$P \rightarrow aX / \lambda$

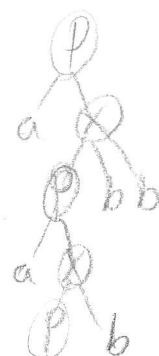
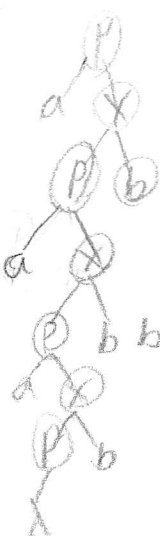
$X \rightarrow Pb / Pb b$

a) $\{a^m b^m / m \geq 0, m \geq 0\}$

b) Em X , a palavra pode ser aumentada em 2 b , ou apenas 1 b

c) $P \rightarrow aX / \lambda$

$X \rightarrow Pb$



4) Construa gramática equivalente sem símbolos iniciais

$$S \rightarrow a/aA/B/\epsilon$$

$$A \rightarrow aB/\lambda$$

$$B \rightarrow bbAa$$

$$S \rightarrow a/aA/B$$

$$A \rightarrow aB/\lambda$$

$$B \rightarrow bbAa$$

→

✓

~~$$C \rightarrow cCD$$~~

~~$$D \rightarrow ddd$$~~



5) Elimine as regras λ da gramática a seguir:

$$P \rightarrow AB/aB$$

$$A \rightarrow BBB/aBA$$

$$B \rightarrow a/aA/\lambda$$

$$V_1 = \{A, B, P\}$$

$$P \rightarrow AB/A/B/aB/a/\lambda$$

$$A \rightarrow BBP/BB/B/aB/a$$

$$B \rightarrow a/aA/$$

aceita
regra

6) Elimine as regras λ da gramática a seguir:

$$S \rightarrow AaB/aB$$

$$V_1 = \{A, B\}$$

$$S \rightarrow AaB/aB/Aa/a/aB/a$$

~~$$A \rightarrow \lambda$$~~

$$B \rightarrow bbA/\lambda$$

$$B \rightarrow bbA/\lambda$$

7) Sepa a gramática:

$$P \rightarrow AAA/B$$

$$A \rightarrow aA/B/BC$$

$$B \rightarrow \lambda$$

~~$$C \rightarrow BC$$~~

a) Se ~~separarmos~~ símbolos iniciais, elimine-os

$$P \rightarrow AAA/B$$

$$\rightarrow A \rightarrow aA/B$$

$$B \rightarrow \lambda$$

aceita
regra

b) Elimine as regras λ $V_1 = \{P, A, B\}$

$$P \rightarrow AAA/B/\lambda$$

$$A \rightarrow aA/a$$

c) Unitárias:

$$P \rightarrow AAA/\lambda$$

$$A \rightarrow aA/a$$

8) Separa gramática

$$S \rightarrow OAO / \textcircled{1}B\textcircled{1} / \textcircled{B}B$$

$$A \rightarrow \textcircled{C}$$

$$B \rightarrow S / A$$

$$C \rightarrow S / \lambda \quad \text{aceito
vazio}$$

a) Inúteis

b) regras λ $V_1 = \{A, B, C\}$

$$S \rightarrow OAO / \textcircled{00} / \textcircled{1}B\textcircled{1} / \textcircled{1}1 / \textcircled{B}B / \textcircled{B} / \lambda$$

$$A \rightarrow \textcircled{C}$$

$$B \rightarrow S / A$$

$$C \rightarrow S$$

c) regras unitárias

$$S \rightarrow \textcircled{00} / \textcircled{1}1 / \lambda$$

9) Separa a gramática:

$$S \rightarrow abAB$$

$$A \rightarrow bAB / \lambda$$

$$B \rightarrow bBAa / \lambda$$

$$C \rightarrow BC$$

Faça a simplificação

$$\rightarrow V_1 = \{A, B\} \rightarrow S \rightarrow abAB / abA / abB / ab$$

$$A \rightarrow bAB / bA / bB$$

$$B \rightarrow bBAa / bBa / bAa$$

$$C \rightarrow BC / \textcircled{C}$$

unitárias

$$S \rightarrow \textcircled{a}bAB / \textcircled{a}bA / \textcircled{a}bB / ab$$

$$A \rightarrow bAB / bA / bB$$

$$B \rightarrow bBAa / bBa / bAa$$

$$C \rightarrow BC$$

loop e movimento

Inúteis:

$$S \rightarrow ab$$