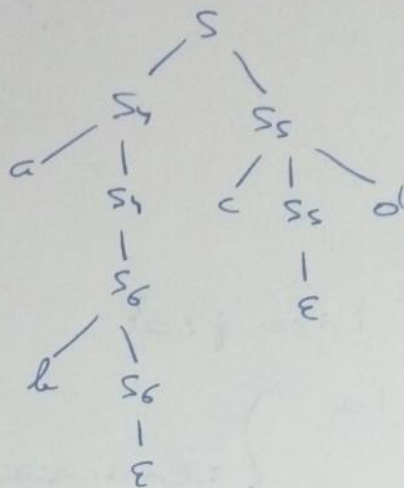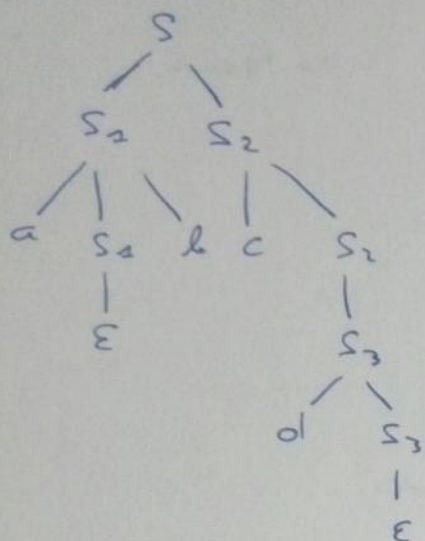# MC: Guión 2 de prácticas

Julio A. Fresneda - 49215154F

1. PALABRA: $abcd$
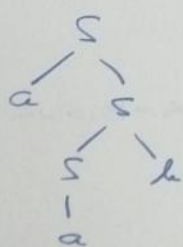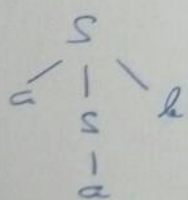

ES AMBIGUA ✓

A) $L = \{ a^i b^j c^k d^l \mid i, j, k, l \in [0, \infty), (i = j) \vee (k = l) \}$

B) NO HE ENCONTRADO

2.

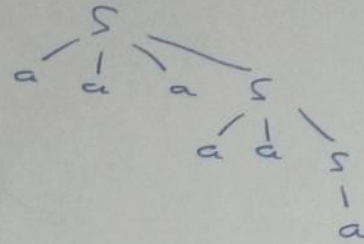**A)** PALABRA: aab

AMBIGUA

$L = \{ a^i b^j \mid i \geq 2, j \geq 0 \}$

$S \to aS \mid aS_2$
$S_2 \to bS_2 \mid \varepsilon$ $\Big\}$ NO ES AMBIGUA $\Rightarrow$ LENGUAJE NO
AMBIGUO
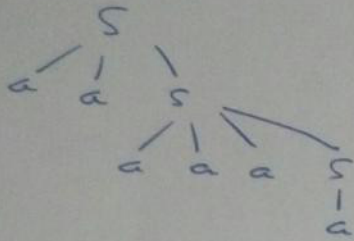
B) PALABRA: aaaaa

AMBIGUA

$$L = \{ a^{2i+3j+1} \mid i \geq 0, j \geq 0 \}$$

$$S \rightarrow aaS \mid S_1 \mid a$$
$$S_1 \rightarrow aaaS_2$$
$$S_2 \rightarrow aaaS_1 \mid a$$

$\left.\right\}$ LENGUAJE NO AMBIGUO

C) PALABRA: aa
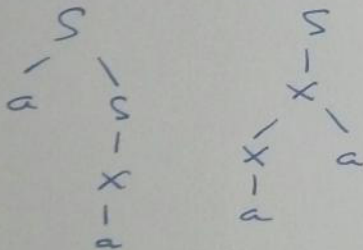
AMBIGUA

$$L = \{ a^i b^j a^k \mid i > j, \ i, j \geq 0, \ k \geq 1 \}$$

NO ENCUENTRO GRAMÁTICA NO AMBIGUA... EL
LENGUAJE ES AMBIGUO

S → A   B → CD   C → Cc   D → aDd   E → aaGB

S → BCa   B → ECd   C → Bh   D → Dd   E → EFG

S → aDcd   B → Ad   C → AaE   B → ε   F → aFd

S → EDF   B → ε   C → c   F → d

A → aAh

A → c

$\Downarrow$

S → A   B → Cb   C → X̶Xc   D → XaDXd   E → XaXcEB

S → BEXa   B → ECX̶d   C → BXh   D → DXd   E → EFG

S → XaDXcX̶   B → AXd   C → AXcE   D → E   F → XaFXd

S → CDF   B → E   C → X̶c   F → d

A → XcAXh

A → X̶c

$X_a \to a$
$X_b \to b$
$X_d \to c$
$X_d \to d$

$\Downarrow$

S → c   A → Xa Y5   D → Xa Y8

S → BY1   · Y5 → AXh   · Y8 → DXd

· Y1 → CXa   Xh → h   D → DXd

Xa → a   B → CD   D → E

S → Xa Y2   B → E Y6   E → Xa Y9

· Y2 → DY3   · Y6 → CXd   · Y9 = Xc Y10

· Y3 → Xc Xd   B → AXd   · Y10 = EB

Xc → c   B → E   E → E Y11

Xd → d   C → CXc   · Y11 = FG

S → E Y4   C → BXh   F = Xa Y12

· Y4 → DF   C → A Y7   · Y12 = FXd

     · Y7 → Xa E   F → d

$X_a \to a$

$X_b \to b$

$X_c \to c$

$X_d \to d$

PRIMERO PASAMOS A CHOMSKY

$S_1 \to S_1 S_2 X_c$ $S_2 \to S_1 S_1$ $X_c \to c$

$S_1 \to S_3$ $S_2 \to X_d$ $X_d \to d$

$S_1 \to S_1 X_h S_3$ $S_3 \to S_2 X_e$ $X_h \to h$

                                      $X_e \to e$

$\overbrace{\hspace{5cm}}$

$S_1 \to S_1 D_1$ $S_2 \to S_1 S_1$ $X_c \to c$

$D_1 \to S_2 X_c$ $S_2 \to X_d$ $X_d \to d$

$S_1 \to S_3$ $S_3 \to S_1 X_e$ $X_h \to h$

$S_1 \to S_3 D_2$ $X_e \to e$

$D_2 \to X_h S_3$

$$\delta(q_0, \varepsilon, R) = \{(q_0, \varepsilon)\}$$

$$\delta(q_0, a, R) = \{(q_0, AR)\}$$

$$\delta(q_0, c, A) = \{(q_0, AA)\}$$

$$\delta(q_0, b, A) = \{(q_0, BA)\}$$

$$\delta(q_0, b, B) = \{(q_0, BB)\}$$

$$\delta(q_0, c, B) = \{(q_0, \varepsilon)\}$$

$$\delta(q_0, c, A) = \{(q_1, A)\} \qquad \delta(q_0, d, B) = \{(q_2, \varepsilon)\}$$

$$\delta(q_0, c, A) = \{(q_1, A)\} \qquad \delta(q_2, \varepsilon, B) = \{(q_2, \varepsilon)\}$$

$$\delta(q_0, d, A) = \{(q_3, \varepsilon)\} \qquad \delta(q_2, \varepsilon, A) = \{(q_3, \varepsilon)\}$$

$$\delta(q_2, \varepsilon, R) = \{(q_1, \varepsilon)\} \qquad \delta(q_3, d, A) = \{(q_3, \varepsilon)\}$$

$$\delta(q_3, \varepsilon, R) = \{(q_3, \varepsilon)\}$$

$$\delta(q_0, d, A) = \{(q_4, \varepsilon)\} \qquad \delta(q_0, b, R) = \{(q_5, BR)\}$$

$$\delta(q_4, d, A) = \{(q_4, \varepsilon)\} \qquad \delta(q_5, b, B) = \{(q_5, BB)\}$$

$$\delta(q_4, \varepsilon, A) = \{(q_5, \varepsilon)\} \qquad \delta(q_5, c, B) = \{(q_5, \varepsilon)\}$$

$$\delta(q_4, d, R) = \{(q_5, R)\} \qquad \delta(q_5, \varepsilon, B) = \{(q_5, \varepsilon)\}$$

$$\delta(q_4, \varepsilon, R) = \{(q_4, \varepsilon)\} \qquad \delta(q_5, c, R) = \{(q_5, R)\}$$

$$\delta(q_5, \varepsilon, R) = \{(q_5, \varepsilon)\}$$
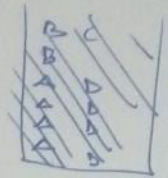
6/

a) NO SE PUEDE HACER DETERMINISTA, YA QUE EL LENGUAJE INCLUYE LA CADENA VACÍA.

b)

$$\delta(q_0, 4, R) = \{(q_0, \varepsilon)\}$$

$$\delta(q_0, 0, R) = \{(q_0, AR)\}$$

$$\delta(q_0, 0, A) = \{(q_0, AA)\}$$

$$\delta(q_0, 1, R) = \{(q_1, AR)\}$$

$$\delta(q_0, 1, A) = \{(q_1, AA)\}$$

$$\delta(q_1, 1, A) = \{(q_1, AA)\}$$

$$\delta(q_0, 2, R) = \{(q_2, AR)\}$$

$$\delta(q_0, 2, A) = \{(q_2, AA)\}$$

$$\delta(q_1, 2, R) = \{(q_2, AR)\}$$

$$\delta(q_1, 2, A) = \{(q_2, AA)\}$$

$$\delta(q_0, 3, A) = \{(q_3, \varepsilon)\}$$

$$\delta(q_1, 3, A) = \{(q_3, \varepsilon)\}$$

$$\delta(q_2, 3, A) = \{(q_3, \varepsilon)\}$$

$$\delta(q_3, 3, A) = \{(q_3, \varepsilon)\}$$

$$\delta(q_3, 4, R) = \{(q_3, \varepsilon)\}$$

7)

$$\delta(q_0, \varepsilon, R) = \{(q_0, \varepsilon)\}$$

$$\delta(q_0, a, R) = \{(q_0, AR)\}$$

$$\delta(q_0, a, A) = \{(q_0, AA)\}$$

$$\delta(q_0, b, A) = \{(q_1, \varepsilon)\}$$

$$\delta(q_1, b, A) = \{(q_0, \varepsilon)\}$$

$$\delta(q_2, b, R) = \{(q_2, BR)\}$$

$$\delta(q_2, b, R) = \{(q_2, BB)\}$$

$$\delta(q_2, c, B) = \{(q_3, \varepsilon)\}$$

$$\delta(q_3, c, B) = \{(q_3, \varepsilon)\}$$

$$\delta(q_3, \varepsilon, R) = \{(q_3, \varepsilon)\}$$

$$\delta(q_1, \varepsilon, R) = \{(q_1, \varepsilon)\}$$

$$\delta(q_0, b, R) = \{(q_4, AR)\}$$

$$\delta(q_4, b, A) = \{(q_4, AA)\}$$

$$\delta(q_4, c, A) = \{(q_4, \varepsilon)\}$$

$$\delta(q_4, \varepsilon, R) = \{(q_4, \varepsilon)\}$$

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9)

$$S \to a S_1 a$$
$$S_1 \to 0 S_1 0 \mid 1 S_1 1 \mid a$$

PASAMOS A CHOWNSKY:

$$S \to X_a S_a X_a$$
$$S_a \to X_0 S_1 X_0$$
$$S_a \to X_1 S_1 X_1$$
$$S_a \to a$$
$$X_a \to a$$
$$X_0 \to 0$$
$$X_1 \to 1$$

$$\left. \right\}$$

$$S \to X_a D_1 \qquad D_1 \to S_1 X_a \qquad X_0 \to 0$$
$$S_1 \to X_0 D_2 \qquad D_2 \to S_1 X_0 \qquad X_1 \to 1$$
$$S_1 \to X_a D_3 \qquad D_3 \to S_1 X_1 \qquad X_a \to a$$
$$S_1 \to a$$

CYK CON $a0a0a$:

a	0	a	0	a
$S_1 X_a$	X_0	$S_1 X_a$	X_0	$S_a X_a$
D_2	$\emptyset$	D_1	$\emptyset$	
$\emptyset$	S_1	$\emptyset$		
$\emptyset$	D_1			
(S)				

SÍ
PERTENECE

CYK CON $a1a0a$:

a	1	a	0	a
$S_1 X_a$	X_1	$S_1 X_a$	X_0	$S_1 X_a$
D_3	$\emptyset$	D_1	$\emptyset$	
$\emptyset$	$\emptyset$	$\emptyset$		
$\emptyset$	$\emptyset$			
$\emptyset$				

NO PERTENECE

A) R[0]: (0,0,S,ε,AaB), (0,0,S,ε,AaC),

(0,0,A,ε,Ab), (0,0,A,ε,A), (0,0,A,ε,B), (0,0,A,ε,d,

(0,0,B,ε,BdC), (0,0,B,ε,d), (0,0,C,ε,CeB), (0,0,C,ε,2)

R[1]:

(0,1,A,b,ε), (0,1,S,A,aB), (0,1,S,A,aC),

(0,1,A,A,b), (0,1,A,A,c),

(1,1,A,a,Ab), (1,1,A,ε,A), (1,1,A,ε,b), (1,1,A,ε,c),

(1,1,B,ε,BdC), (1,1,B,ε,0), (1,1,C,ε,CeB), (1,1,C,ε,2)

.

R[2]:

(0,2,A,Ab,ε), (1,2,A,b,ε),

(1,2,A,aA,b), (1,2,A,A,c),

(2,2,A,ε,Ab), (2,2,A,ε,A), (2,2,A,ε,b), (2,2,A,ε,d,

(2,2,B,ε,Bdd, (2,2,B,ε,0), (2,2,C,ε,CeB), (2,2,C,ε,2)

S HA DESAPAREODO... HAY UN PASO QUE HAGO MAL,
PERO NO SE CUAL.

R[0]: (0, 0, S, ε̇, A a B), (0, 0, S, ε̇, A a C),

(0, 0, A, ε̇, A l), (0, 0, A, ε̇, A c), (0, 0, A, ε, l), (0, 0, Å, ε, c),

(0, 0, B, ε, B d C), (0, 0, B, ε, ó), (0, 0, C, ε, C e B), (0, 0, C, ε, 2)

R[1]: (0, 1, A, c, ε), (0, 1, S, A, a B), (0, 1, S, Á, a C),

(0, 1, Á, A, l), (0, 1, A, A, c),

(1, 1, A, ε̇, A l), (1, 1, Å, ε, A c), (1, 1, Á, ε, l), (1, 1, A, ε, c),

(1, 1, B, ε, B d C), (1, 1, B, ε, ó), (1, 1, C, ε, C e B), (1, 1, C, ε, 2)

R[2]: (0, 2, A, A l, ε), (1, 2, A, l, ε),

(1, 2, A, A, l), (2, 2, A, A, c),

(2, 2, A, ε, A l), (2, 2, A, ε, A c),

(2, 2, A, ε, l), (2, 2, A, ε, c),

(2, 2, B, ε, B d C), (2, 2, B, ε, ó),

(2, 2, C, ε, C e B), (2, 2, C, ε, 2)

S NO VA A ESTAR...

LA PALABRA NO PERTENECE