Universidad del Valle de Guatemala
Diseño de lenguajes de programación
Sección 10

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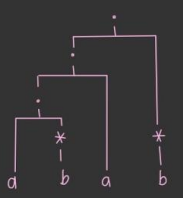
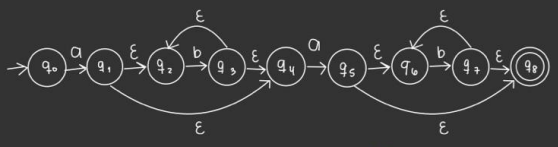
Pre Laboratorio No.1

- ab*ab*

Construya un AFN con el algoritmo de Thompson:

ab * ab *





Transiciones

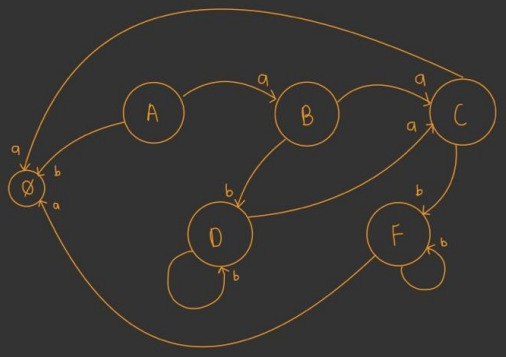
	a	b	ε
→ q_0	q_1	∅	∅
q_1	∅	∅	q_2, q_4
q_2	∅	q_3	∅
q_3	∅	∅	q_4, q_2
q_4	q_5	∅	∅
q_5	∅	∅	q_6, q_8
q_6	∅	q_7	∅
q_7	∅	∅	q_6, q_8
* q_8	∅	∅	∅

Construya un AFD utilizando el algoritmo de subconjuntos:

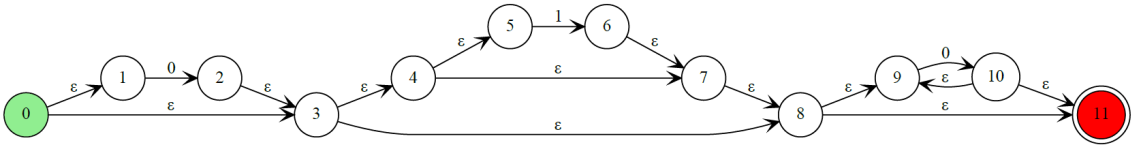
Calcular cerraduras ε:

ε closure $(q_0) = \{q_0\}$
$(q_1) = \{q_1, q_2, q_4\}$
$(q_2) = \{q_2\}$
$(q_3) = \{q_3, q_4, q_2\}$
$(q_4) = \{q_4\}$
$(q_5) = \{q_5, q_6, q_8\}$
$(q_6) = \{q_6\}$
$(q_7) = \{q_6, q_7, q_8\}$
$(q_8) = \{q_8\}$

		a		b	
A →	$\{q_0\}$	$\{q_1, q_2, q_4, q_5, q_6, q_8\}$	A	∅	
B →	$\{q_1, q_2, q_4, q_5, q_6, q_8\}$	$\{q_5, q_6, q_8\}$	C	$\{q_2, q_3, q_4, q_6, q_7, q_8\}$	D
C →	$\{q_5, q_6, q_8\}$	∅		$\{q_6, q_7, q_8\}$	F
D →	$\{q_2, q_3, q_4, q_6, q_7, q_8\}$	$\{q_5, q_6, q_8\}$	C	$\{q_2, q_3, q_4, q_6, q_7, q_8\}$	D
F →	$\{q_6, q_7, q_8\}$	∅		$\{q_6, q_7, q_8\}$	F



- 0? (1?)? 0*
  - AFN
    - Diagrama



    - Tabla de transiciones

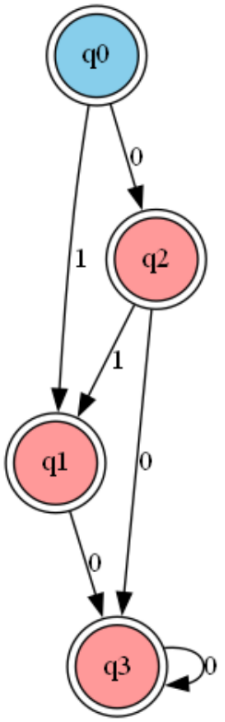
	0	1	ε
0	∅	∅	1,3
1	2	∅	∅
2	∅	∅	3
3	∅	∅	4,8
4	∅	∅	5,7
5	∅	6	∅
6	∅	∅	7
7	∅	∅	8
8	∅	∅	9,11
9	10	∅	∅
10	∅	∅	11,9
11	∅	∅	∅

Construcción de subconjuntos

1. Tabla de transiciones

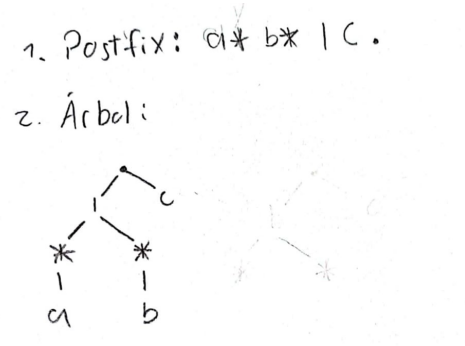
	Transiciones	
Subconjunto (estados)	0	1
q0 = {0, 1, 3, 4, 5, 7, 8, 9, 11}	q2	q1
q2 = {2, 3, 4, 5, 7, 8, 9, 10, 11}	q3	q1
q1 = {6, 7, 8, 9, 11}	q3	∅

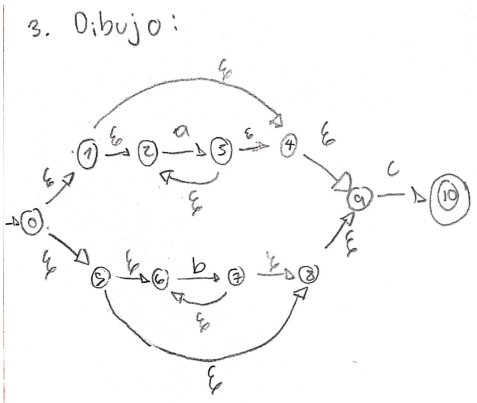
q3 = { 9, 10, 11 }	q3	∅



- (a*|b*)c

Construcción por Thomson





4. Tabla de transiciones

	A	B	C	ε
0	∅	∅	∅	{1, 5}
1	∅	∅	∅	{2, 4}
2	{ 3 }	∅	∅	∅
3	∅	∅	∅	{2, 4}

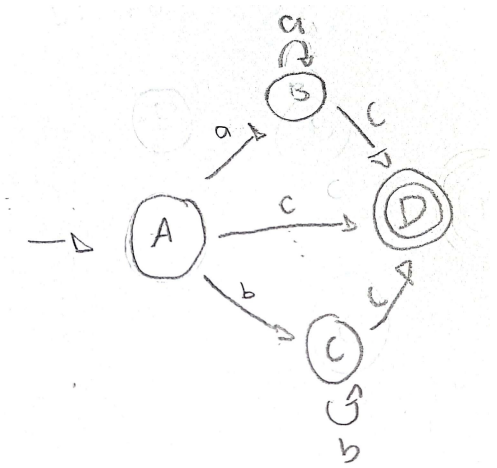
4	∅	∅	∅	{ 9 }
5	∅	∅	∅	{6, 8}
6	∅	{ 7 }	∅	∅
7	∅	∅	∅	{6, 8}
8	∅	∅	∅	{ 9 }
9	∅	∅	{ 10 }	∅
10	∅	∅	∅	∅

Construcción de subconjuntos

2. Tabla de transiciones

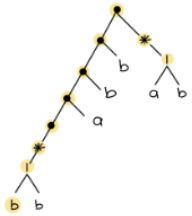
	Transiciones		
Subconjunto (estados)	a	b	c
A = {0, 1, 2, 4, 5, 6, 8, 9}	B	C	D
B = {2, 3, 4, 9}	B	∅	D
C = {6, 7, 8, 9}	∅	C	D
D = { 10 }	∅	∅	∅

3. Dibujo



- (b|b)*abb(a|b)*

árbol sintactico



autómata AFN

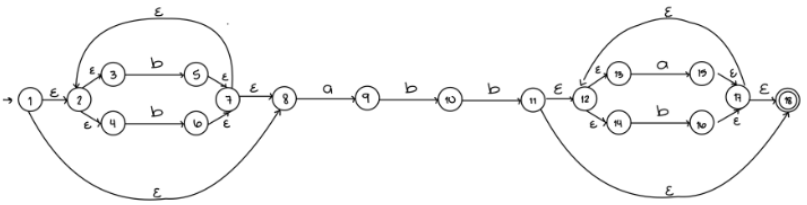


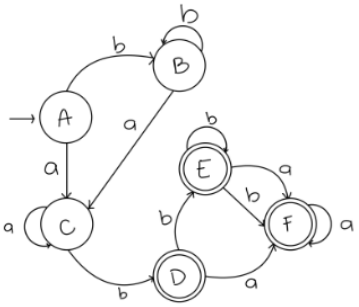
tabla de transiciones

	A	B	ε
1	∅	∅	2
2	∅	∅	3,4
3	∅	5	∅
4	∅	6	∅
5	∅	∅	7
6	∅	∅	7
7	∅	∅	8
8	9	∅	∅
9	∅	10	∅
10	∅	11	∅
11	∅	∅	12
12	∅	∅	13,14
13	15	∅	∅
14	∅	16	∅
15	∅	∅	17
16	∅	∅	17
17	∅	∅	18
18	∅	∅	∅

tabla de transiciones

	a	b
A	C	B
B	C	B
C	C	D
D	F	E
E	F	E
F	F	E

autómata ADF



conjunto de estados

A = { 1, 2, 3, 4, 8 }

B = { 2,3,4,5,6,7,8 }

C = { 9 }

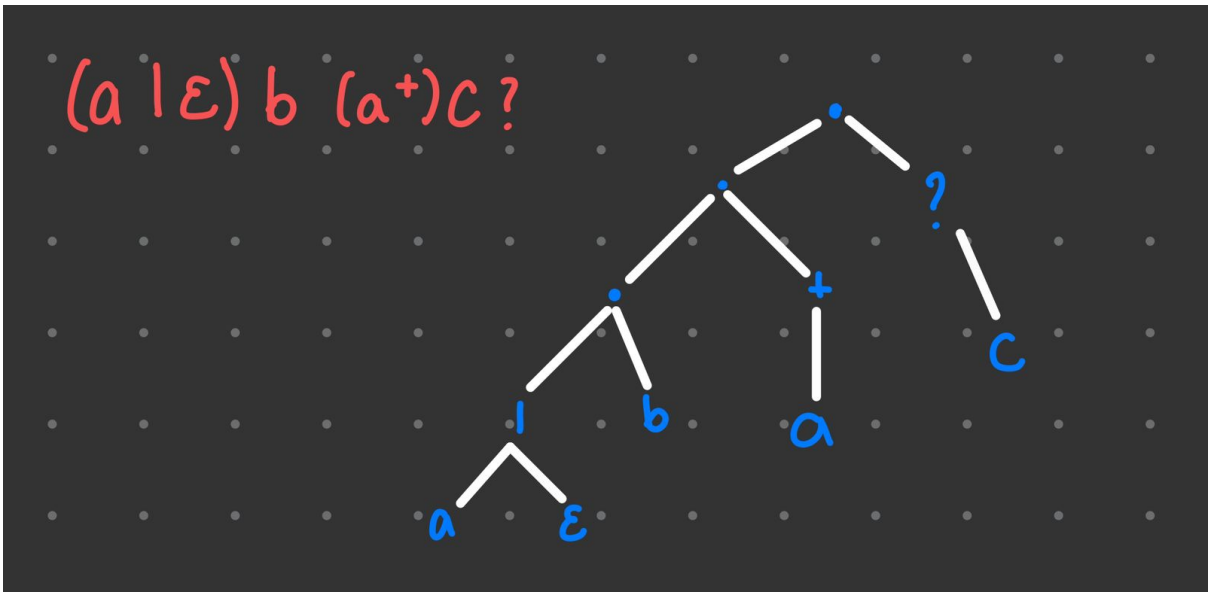
D = { 10, 11, 12, 13, 14, 18 }

E = { 10, 11, 12, 13, 14, 16, 17, 18 }

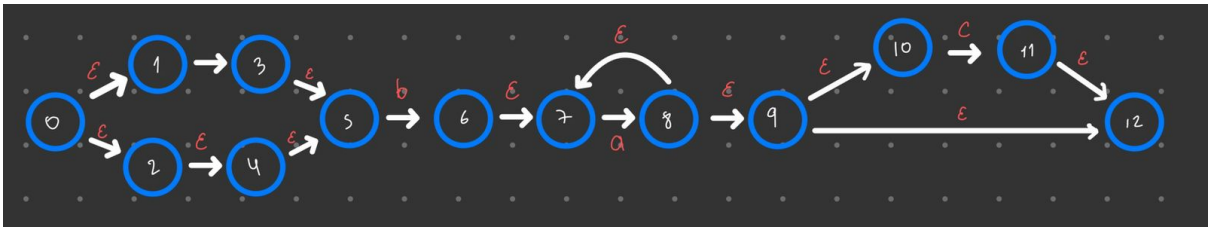
F = { 11, 12, 13, 15, 17, 18 }

- (a|ε)b(a+)c?

1. Arbol de expresión



2. AFN (Dibujo)

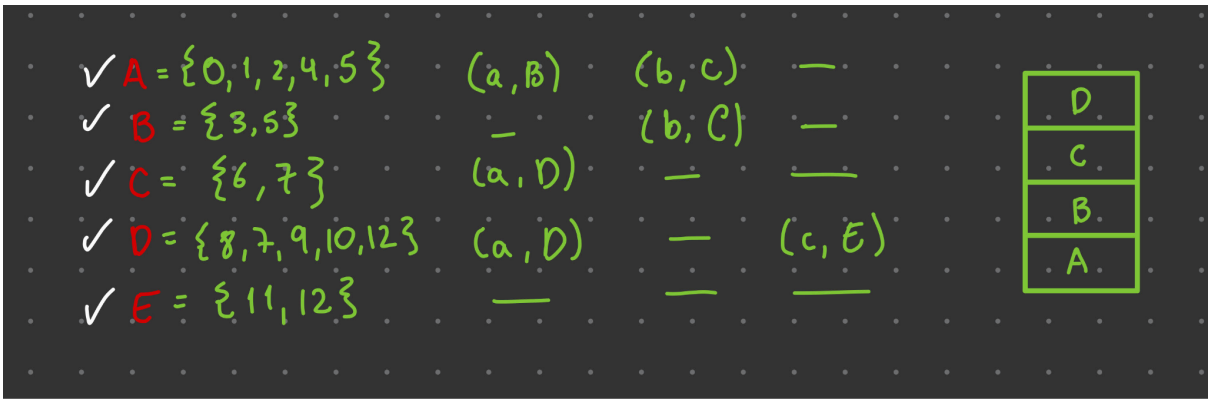


3. Tabla de transicion

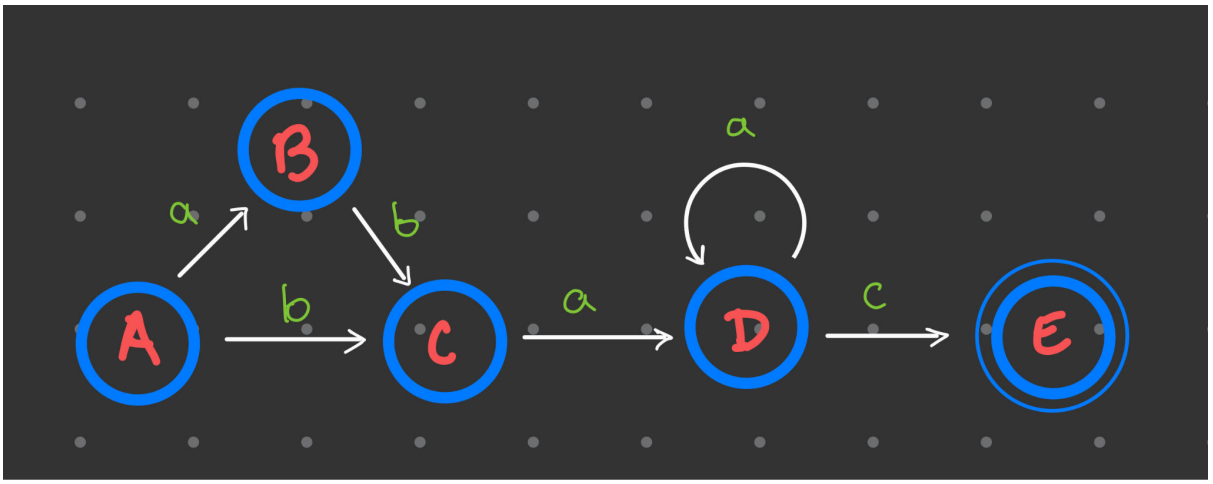
	A	B	C	ε
0	∅	∅	∅	{1, 2}
1	{ 3 }	∅	∅	∅
2	∅	∅	∅	{4}
3	∅	∅	∅	{5}
4	∅	∅	∅	{5}
5	∅	{6}	∅	∅
6	∅	∅	∅	{7}

7	{8}	∅	∅	∅
8	∅	∅	∅	{ 7,9 }
9	∅	∅	∅	{ 10,12 }
10	∅	∅	{11}	∅
11	∅	∅	∅	{12}
12	∅	∅	∅	∅

4. Subconjuntos



5. AFD



- (a|b)*a(a|b)(a|b)

- $(a|b)^*\cdot a\cdot(a|b)\cdot(a|b)$

$\rightarrow ab|^*a\cdot ab|\cdot ab|\cdot$

árbol sintáctico:

autómata AFN

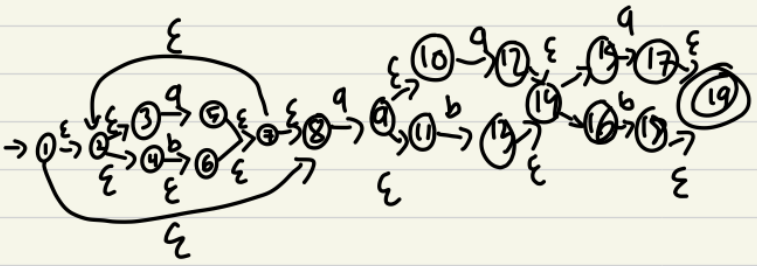
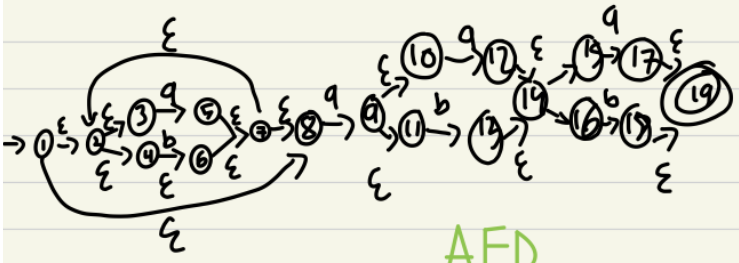


tabla de transiciones

	A	B	ε
1	∅	∅	2,8
2	∅	∅	3,4
3	5	∅	∅
4	∅	6	∅
5	∅	∅	7
6	∅	∅	7
7	∅	∅	8
8	9	∅	∅
9	∅	∅	10,11
10	12	∅	∅
11	∅	13	∅
12	∅	∅	14
13	∅	∅	14
14	∅	∅	15,16
15	17	∅	∅
16	∅	18	∅
17	∅	∅	19
18	∅	∅	19
19	∅	∅	∅

automata AFN



AFD

q	a	b
A	B	C
B	D	E
C	B	C
D	F	G
E	H	I
F	F	G
G	H	I
H	D	E
I	B	C

G = {2, 3, 5, 6, 7, 8, 4, 10, 12, 16, 19}

F = {2, 3, 4, 5, 7, 8, 9, 6, 11, 12, 14, 15, 16, 17, 19}

E = {2, 3, 5, 6, 7, 0, 13, 14, 15, 17}

D = {2, 3, 5, 6, 7, 8, 13, 14, 15, 17}

C = {2, 3, 5, 6, 7, 8}

B = {2, 3, 4, 5, 7, 8, 9, 10, 12}

A = {1, 2, 3, 5, 8}

I = {2, 3, 5, 6, 7, 13, 4}

H = {2, 3, 4, 5, 7, 8, 9, 6, 12, 16, 19}