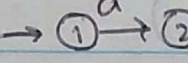
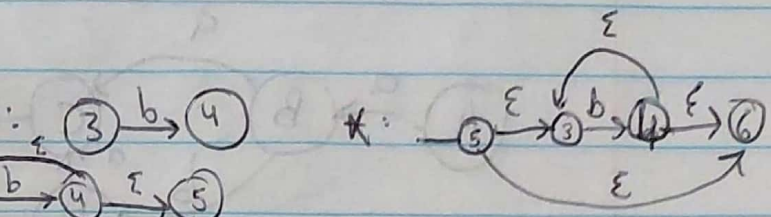
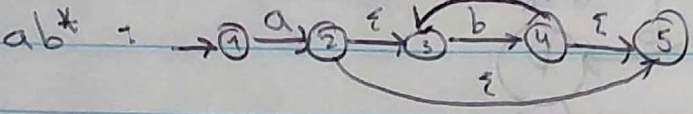
ab^*ab^*

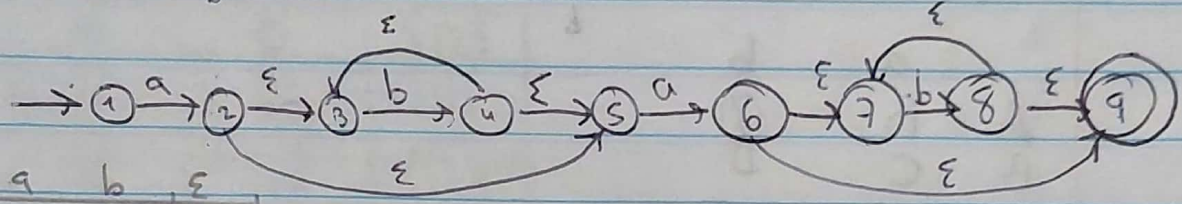
AFN

a:

b: 

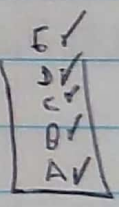
*: 

ab^*: 

ab^*ab^*: 

	a	b	ε
1	{2}	∅	∅
2	∅	∅	{3,5}
3	∅	{4}	∅
4	∅	∅	{5,3}
5	{6}	∅	∅
6	∅	∅	{7,9}
7	∅	{8}	∅
8	∅	∅	{9,7}
9	∅	∅	∅

AFD



ε-closure({1}) = {1} = A

ε-closure(mueve(A,a)) = ε-closure({2}) = {2,3,5} = B

ε-closure(mueve(A,b)) = ε-closure({∅}) = {∅}

ε-closure(mueve(B,a)) = ε-closure({6}) = {6,7,9} = C

ε-closure(mueve(B,b)) = ε-closure({4}) = {4,5,3} = D

ε-closure(mueve(C,a)) = ε-closure({∅}) = {∅}

ε-closure(mueve(C,b)) = ε-closure({8}) = {8,7,9} = E

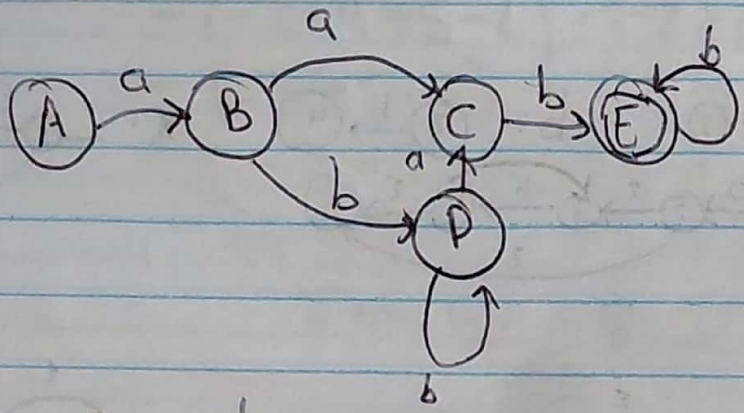
ε-closure(mueve(D,a)) = ε-closure({6}) = {6,7,9} = C

ε-closure(mueve(D,b)) = ε-closure({4}) = D

ε-closure(mueve(E,a)) = ε-closure(∅) = {∅}

ε-closure(mueve(E,b)) = ε-closure({8}) = E

Escaneado con CamScanner

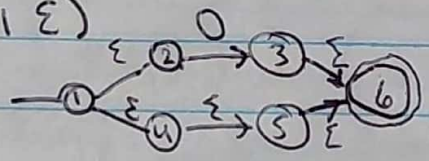


	a	b
A	B	∅
B	C	D
C	∅	E
D	C	D
E	∅	E

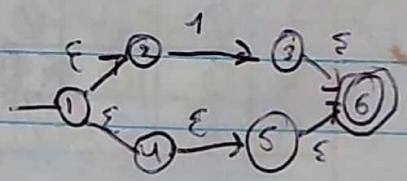
$0?.(1?)?0^*$

$r? = (r|\varepsilon)$

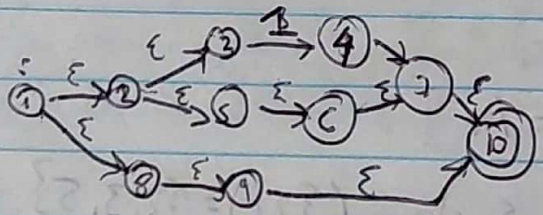
$0? =$



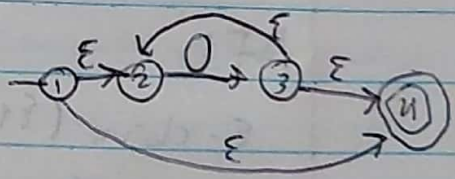
$1? =$



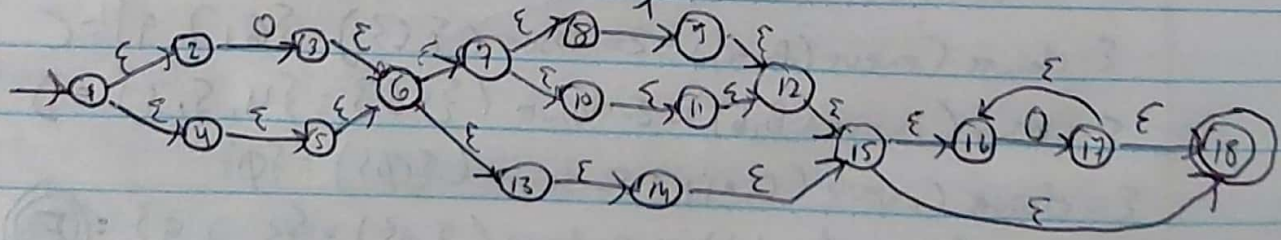
$1?? =$



$0^* =$



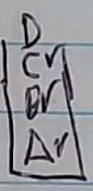
AFN



Escaneado con CamScanner

	0	1	ε
1	∅	∅	{2,4}
2	{3}	∅	∅
3	∅	∅	{6}
4	∅	∅	{5}
5	∅	∅	{6}
6	∅	∅	{7,13}
7	∅	∅	{8,10}
8	∅	{9}	∅
9	∅	∅	{12}
10	∅	∅	{11}
11	∅	∅	{12}
12	∅	∅	{15}
13	∅	∅	{14}
14	∅	∅	{15}
15	∅	∅	{16,18}
16	{17}	∅	∅
17	∅	∅	{18,16}
18	∅	∅	∅

AFD



ε-closure ({1}) = {1,2,4,5,6,7,8,10,14,12,13,14,15,16,18} = A

ε-closure (mueve (A,0)) = ε-closure ({3,17}) = {3,6,7,8,10,11,12,13,14,15,16,17,18} = B

ε-closure (mueve (A,1)) = ε-closure ({9}) = {12,15,9,16,18} = C

ε-closure (mueve (B,0)) = ε-closure ({17}) = {17,16,18} = D

ε-closure (mueve (B,1)) = ε-closure ({9}) = C

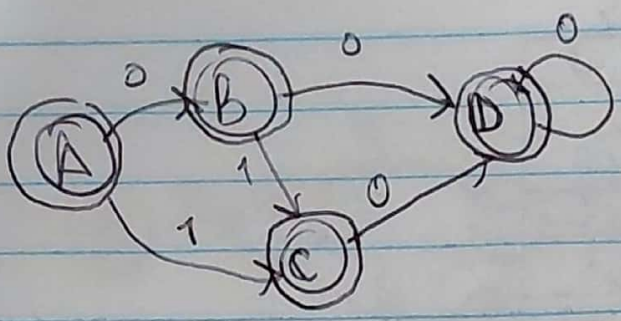
ε-closure (mueve (C,0)) = ε-closure ({17}) = D

ε-closure (mueve (C,1)) = ε-closure ({∅}) = ∅

ε-closure (mueve (D,0)) = ε-closure ({17}) = D

ε-closure (mueve (D,1)) = ε-closure ({∅}) = ∅

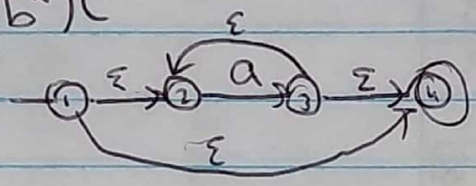
Escaneado con CamScanner



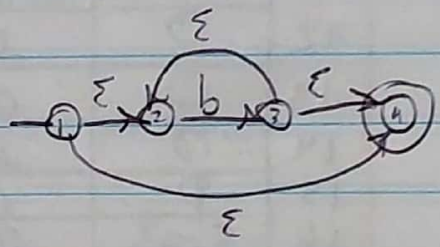
	0	1
A	B	C
B	D	C
C	D	∅
D	D	∅

$(a^*|b^*)c$

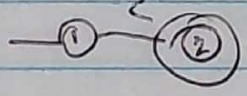
a^* =



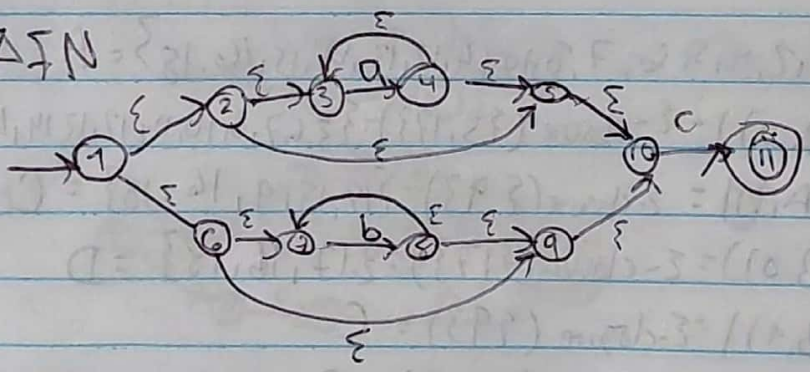
b^* =



C =



AFN



	a	b	c	ε
1	∅	∅	∅	{2, 6}
2	∅	∅	∅	{3, 5}
3	{4}	∅	∅	∅
4	∅	∅	∅	{5, 3}
5	∅	∅	∅	{10}
6	∅	∅	∅	{7, 9}
7	∅	{8}	∅	∅
8	∅	∅	∅	{9, 7}
9	∅	∅	∅	{10}
10	∅	∅	{11}	∅
11	∅	∅	∅	∅

Escaneado con CamScanner

AFD

D
C
B
A

ε-closure($\{1\}$) = $\{2,3,5,1,6,7,9,10\}$ = A

ε-closure(mueve(A, a)) = ε-closure($\{4\}$) = $\{4,3,5,10\}$ = B

ε-closure(mueve(A, b)) = ε-closure($\{8\}$) = $\{8,7,9,10\}$ = C

ε-closure(mueve(A, c)) = ε-closure($\{11\}$) = $\{11\}$ = D

ε-closure(mueve(B, a)) = ε-closure($\{4\}$) = B

ε-closure(mueve(B, b)) = ε-closure($\{\emptyset\}$) = $\emptyset$

ε-closure(mueve(B, c)) = ε-closure($\{11\}$) = $\{11\}$ = D

ε-closure(mueve(C, a)) = ε-closure($\{\emptyset\}$) = $\emptyset$

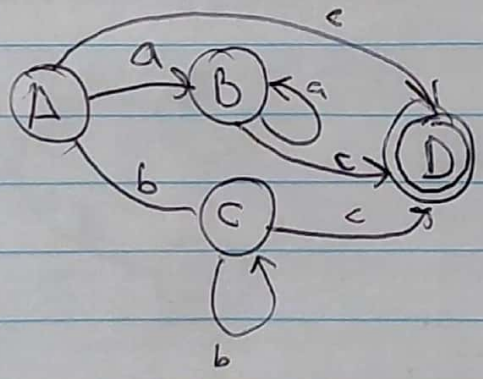
ε-closure(mueve(C, b)) = ε-closure($\{8\}$) = C

ε-closure(mueve(C, c)) = ε-closure($\{11\}$) = $\{11\}$ = D

ε-closure(mueve(D, a)) = ε-closure($\{\emptyset\}$) = $\emptyset$

ε-closure(mueve(D, b)) = ε-closure($\{\emptyset\}$) = $\emptyset$

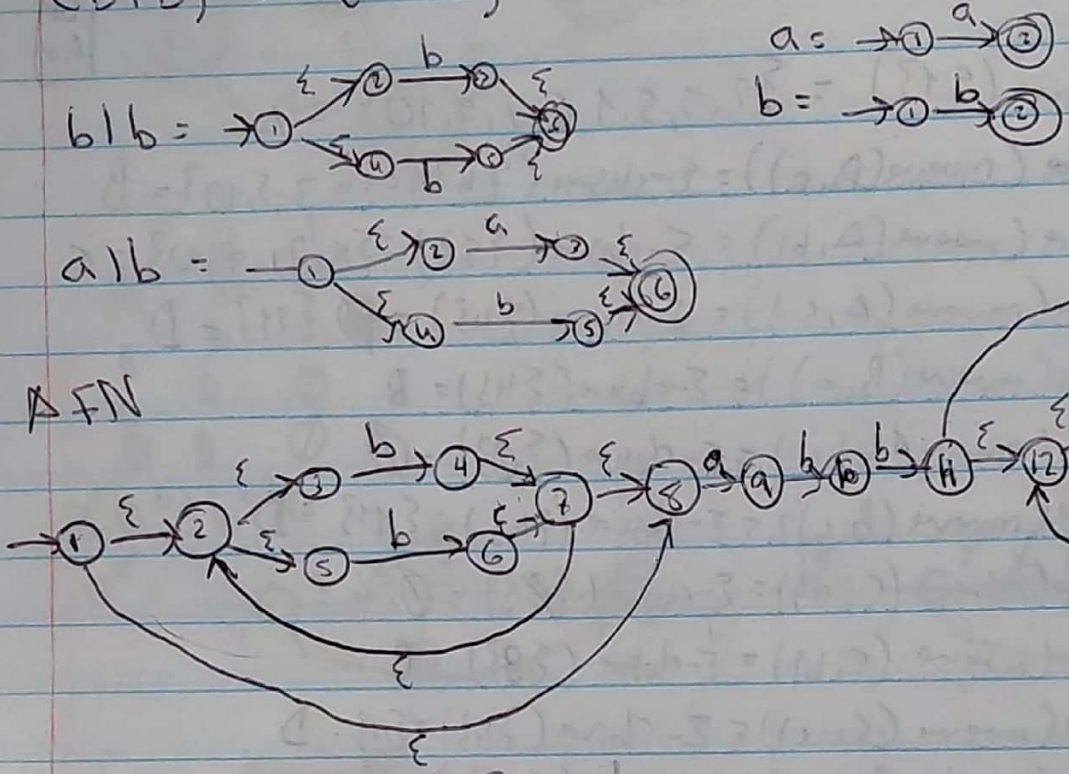
ε-closure(mueve(D, c)) = ε-closure($\{\emptyset\}$) = $\emptyset$



	a	b	c
A	B	C	D
B	B	$\emptyset$	D
C	$\emptyset$	C	D
D	$\emptyset$	$\emptyset$	$\emptyset$

Escaneado con CamScanner

$(b|b)^*abb(a|b)^*$



	a	b	ε
1	∅	∅	{2,8}
2	∅	∅	{3,5}
3	∅	{4}	∅
4	∅	∅	{7}
5	∅	{6}	∅
6	∅	∅	{7}
7	∅	∅	{8,1}
8	{9}	∅	∅
9	∅	{10}	∅
10	∅	{11}	∅
11	∅	∅	{12,18}
12	∅	∅	{13,15}
13	{14}	∅	∅
14	∅	∅	{17}
15	∅	{16}	∅
16	∅	∅	{17}
17	∅	∅	{18,12}
18	∅	∅	∅

Escaneado con CamScanner

AFD

ε-closure({1,3}) = {1,2,3,5,8} = A

ε-closure(mueve(A,a)) = ε-closure({9}) = {9} = B

ε-closure(mueve(A,b)) = ε-closure({4,6}) = {4,7,8,6,2,3,5} = C

ε-closure(mueve(B,a)) = ε-closure({∅}) = ∅

ε-closure(mueve(B,b)) = ε-closure({10}) = {10} = D

ε-closure(mueve(C,a)) = ε-closure({9}) = B

ε-closure(mueve(C,b)) = ε-closure({4,6}) = C

ε-closure(mueve(D,a)) = ε-closure({∅}) = ∅

ε-closure(mueve(D,b)) = ε-closure({11}) = {11,12,13,15,18} = E

ε-closure(mueve(E,a)) = ε-closure({14}) = {17,12,14,13,15,18} = F

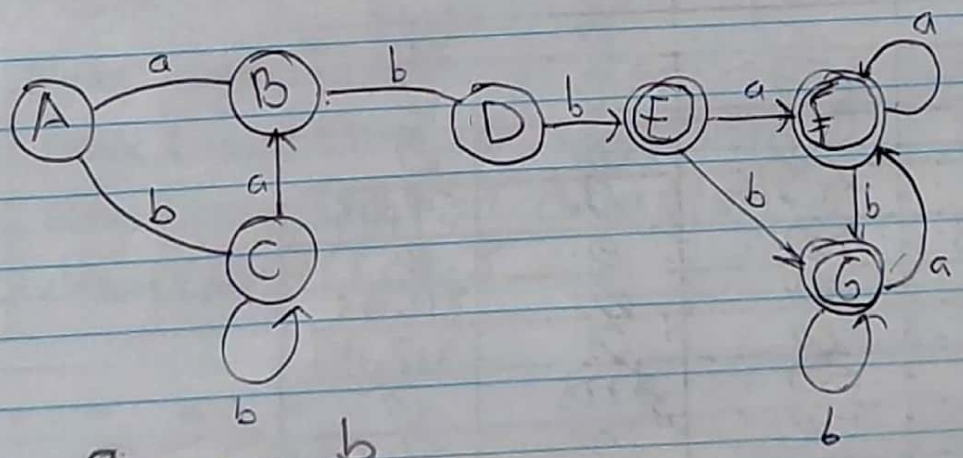
ε-closure(mueve(E,b)) = ε-closure({16}) = {16,17,12,13,15,18} = G

ε-closure(mueve(F,a)) = ε-closure({14}) = F

ε-closure(mueve(F,b)) = ε-closure({16}) = G

ε-closure(mueve(G,a)) = ε-closure({14}) = F

ε-closure(mueve(G,b)) = ε-closure({16}) = G



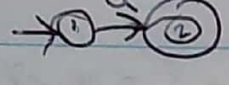
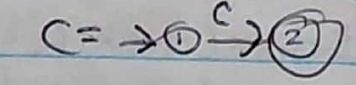
	a	b
A	B	C
B	∅	D
C	B	C
D	∅	E
E	F	G
F	F	G
G	f	G

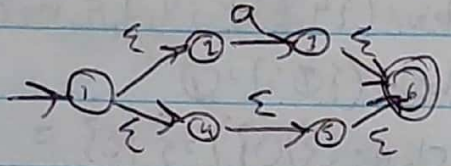
Escaneado con CamScanner

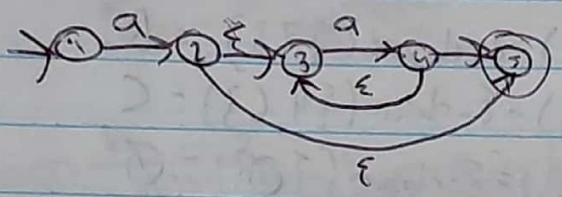
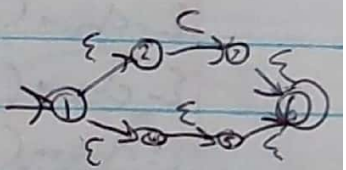
EMPLEO Tigo.pdf

$(a|\varepsilon)b(a+)c?$

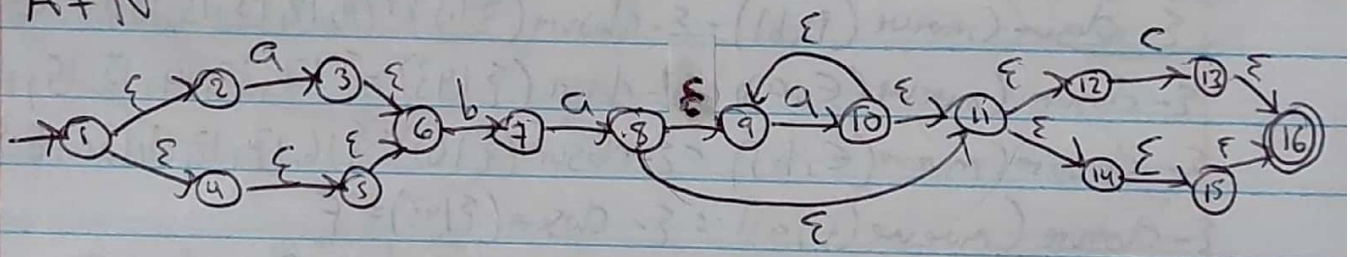
$r+ = rr^*$ $\quad r? = (r|\varepsilon)$

$a =$  $\quad b =$ $\quad c =$ 

$a|\varepsilon =$ 

$a+ =$  $\quad c? =$ 

AFN



	a	b	c	ε
1	∅	∅	∅	{2,4}
2	{3}	∅	∅	∅
3	∅	∅	∅	{6}
4	∅	∅	∅	{5}
5	∅	∅	∅	{6}
6	∅	{7}	∅	∅
7	{8}	∅	∅	∅
8	∅	∅	∅	{9,11}
9	{10}	∅	∅	∅
10	∅	∅	∅	{11,9}
11	∅	∅	∅	{12,14}
12	∅	∅	{13}	∅
13	∅	∅	∅	{16}
14	∅	∅	∅	{15}
15	∅	∅	∅	{16}
16	∅	∅	∅	∅

Escaneado con CamScanner

D
C
B
A

F
E

AFD

ε-closure$(\{1\}) = \{1,2,4,5,6\} = A$

ε-closure(mueve(A,a)) = ε-closure$(\{3\}) = \{3,6\} = B$

ε-closure(mueve(A,b)) = ε-closure$(\{7\}) = \{7\} = C$

ε-closure(mueve(A,c)) = ε-closure$(\emptyset) = \emptyset$

ε-closure(mueve(B,a)) = ε-closure$(\{\emptyset\}) = \emptyset$

ε-closure(mueve(B,b)) = ε-closure$(\{7\}) = C$

ε-closure(mueve(B,c)) = ε-closure$(\emptyset) = \emptyset$

ε-closure(mueve(C,a)) = ε-closure$(\{8\}) = \{8,9,11,12,14,15,16\} = D$

ε-closure(mueve(C,b)) = ε-closure$(\{\emptyset\}) = \emptyset$

ε-closure(mueve(C,c)) = ε-closure$(\{\emptyset\}) = \emptyset$

ε-closure(mueve(D,a)) = ε-closure$(\{10\}) = \{10,11,9,12,14,15,16\} = E$

ε-closure(mueve(D,b)) = ε-closure$(\{\emptyset\}) = \emptyset$

ε-closure(mueve(D,c)) = ε-closure$(\{13\}) = \{13,16\} = F$

ε-closure(mueve(E,a)) = ε-closure$(\{10\}) = E$

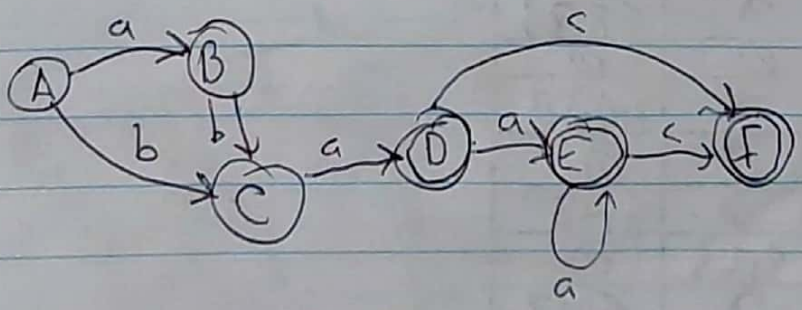
ε-closure(mueve(E,b)) = ε-closure$(\{\emptyset\}) = \emptyset$

ε-closure(mueve(E,c)) = ε-closure$(\{13\}) = F$

ε-closure(mueve(F,a)) = ε-closure$(\{\emptyset\}) = \emptyset$

ε-closure(mueve(F,b)) = ε-closure$(\{\emptyset\}) = \emptyset$

ε-closure(mueve(F,c)) = ε-closure$(\{\emptyset\}) = \emptyset$

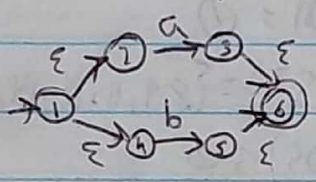


Escaneado con CamScanner

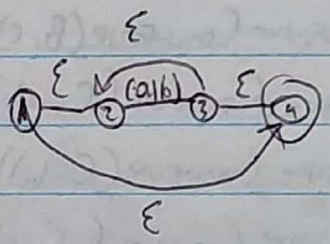
	a	b	c
A	B	C	∅
B	∅	C	∅
C	D	∅	∅
D	E	∅	F
E	E	∅	F
F	∅	∅	∅

$(a|b)^*a(a|b)(a|b)$

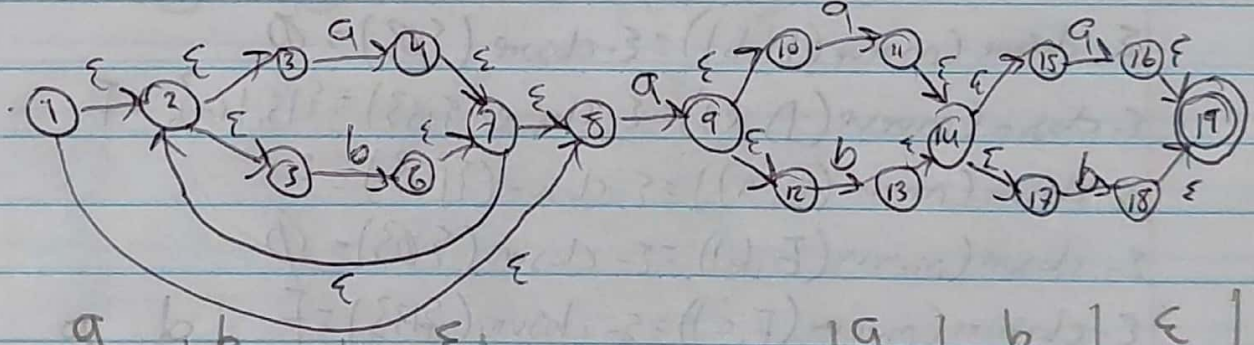
a|b:



*:



AFN



	a	b	ε
1	∅	∅	{2,8}
2	∅	∅	{3,5}
3	{4}	∅	∅
4	∅	∅	{7}
5	∅	{6}	∅
6	∅	∅	{7}
7	∅	∅	{8,2}
8	{9}	∅	∅
9	∅	∅	{10,12}
10	{11}	∅	∅
11	∅	∅	{14}
12	∅	{13}	∅
13	∅	∅	{14}
14	∅	∅	{15,17}
15	{16}	∅	∅
16	∅	∅	{19}

	a	b	ε
17	∅	{18}	∅
18	∅	∅	{19}
19	∅	∅	∅

Escaneado con CamScanner

A B C D E F G H I

AFD

ε-closure({13}) = {1, 2, 3, 5, 8} = A

ε-closure(mueve(A, a)) = ε-closure({4, 9}) = {4, 7, 2, 3, 5, 8, 9, 10, 12} = B

ε-closure(mueve(A, b)) = ε-closure({6}) = {6, 7, 2, 3, 5, 8} = C

ε-closure(mueve(B, a)) = ε-closure({4, 9, 11}) = {4, 7, 2, 3, 5, 8, 9, 10, 12, 11, 14, 15, 17} = D

ε-closure(mueve(B, b)) = ε-closure({6, 13}) = {6, 7, 2, 3, 5, 8, 13, 14, 15, 17} = E

ε-closure(mueve(C, a)) = ε-closure({4, 9}) = B

ε-closure(mueve(C, b)) = ε-closure({6}) = C

ε-closure(mueve(D, a)) = ε-closure({4, 9, 11, 16}) = {4, 7, 2, 3, 5, 8, 9, 10, 12, 11, 14, 15, 17, 16, 19} = F

ε-closure(mueve(D, b)) = ε-closure({6, 13, 18}) = {6, 7, 2, 3, 5, 8, 13, 14, 15, 17, 18, 19} = G

ε-closure(mueve(E, a)) = ε-closure({4, 9, 16}) = {4, 7, 2, 3, 5, 8, 9, 10, 12, 16, 19} = H

ε-closure(mueve(E, b)) = ε-closure({6, 18}) = {6, 7, 2, 3, 5, 8, 18, 19} = I

ε-closure(mueve(F, a)) = ε-closure({4, 9, 11, 16}) = F

ε-closure(mueve(F, b)) = ε-closure({6, 13, 18}) = G

ε-closure(mueve(G, a)) = ε-closure({4, 9, 16}) = H

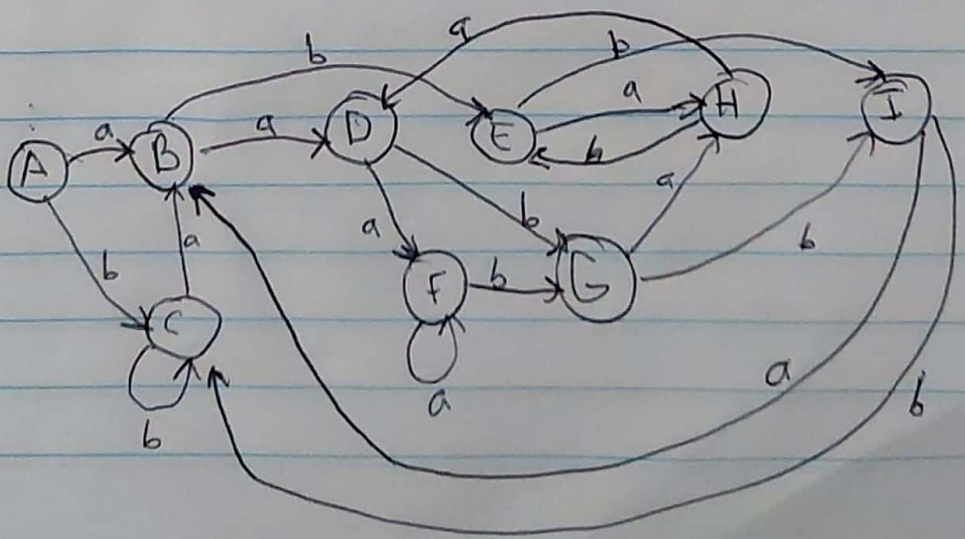
ε-closure(mueve(G, b)) = ε-closure({6, 18}) = I

ε-closure(mueve(H, a)) = ε-closure({4, 9, 11}) = D

ε-closure(mueve(H, b)) = ε-closure({6, 13}) = E

ε-closure(mueve(I, a)) = ε-closure({4, 9}) = B

ε-closure(mueve(I, b)) = ε-closure({6}) = C



Escaneado con CamScanner

	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

Escaneado con CamScanner