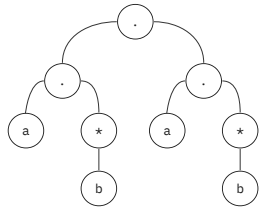
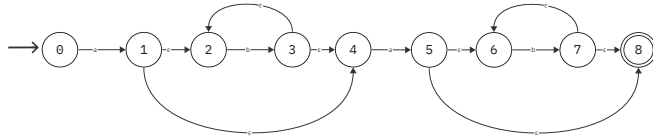


Expresión:  $ab^*ab^*$



Autómata finito no determinista



Autómata finito determinista

Símbolos:  $\{a, b\}$

$e\text{-closure}(\{0\}) = \{0\} = A$

$\text{move}(A, a) = \{1\}$

$e\text{-closure}(\{1\}) = \{1, 2, 4\} = B$

$\text{move}(A, b) = \{\} = E$

$\text{move}(B, a) = \{5\}$

$e\text{-closure}(\{5\}) = \{5, 6, 8\} = C$

$\text{move}(B, b) = \{3\}$

$e\text{-closure}(\{3\}) = \{2, 3, 4\} = D$

$\text{move}(C, a) = \{\} = E$

$\text{move}(C, b) = \{7\}$

$e\text{-closure}(\{7\}) = \{6, 7, 8\} = C$

$\text{move}(D, a) = \{5\}$

$e\text{-closure}(\{5\}) = \{5, 6, 8\} = C$

$\text{move}(D, b) = \{3\}$

$e\text{-closure}(\{3\}) = \{2, 3, 4\} = D$

$\text{move}(E, a) = \{\} = E$

$\text{move}(E, b) = \{\} = E$

D-State

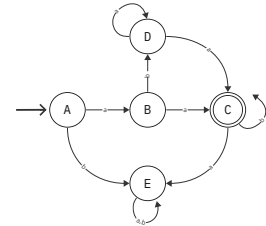
A

B

C

D

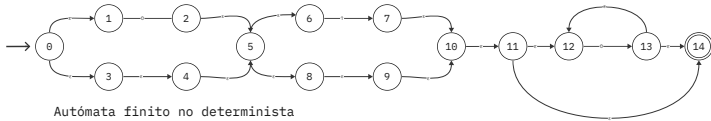
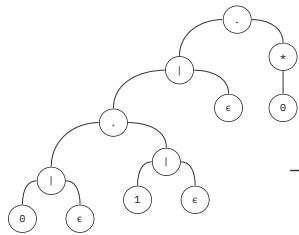
E



Expresión:  $\emptyset?(1?)\emptyset\star$

Reescribiendo:

$\emptyset|\epsilon(1|\epsilon)|\epsilon\emptyset\star$



Autómata finito no determinista

Autómata finito determinista

Símbolos:  $\{0, 1\}$

$e\text{-closure}(\{0\}) = \{0, 1, 3, 4, 5, 6, 8, 9, 10, 11, 12, 14\} = A$

$\text{move}(A, 0) = \{2, 13\}$

$e\text{-closure}(\{2, 13\}) = \{2, 5, 6, 8, 9, 10, 11, 12, 13, 14\} = B$

$\text{move}(A, 1) = \{7\}$

$e\text{-closure}(\{7\}) = \{7, 10, 11, 12, 14\} = C$

$\text{move}(B, 0) = \{13\}$

$e\text{-closure}(\{13\}) = \{12, 14\} = D$

$\text{move}(B, 1) = \{7\}$

$e\text{-closure}(\{7\}) = \{7, 10, 11, 12, 14\} = C$

$\text{move}(C, 0) = \{13\}$

$e\text{-closure}(\{13\}) = \{12, 14\} = D$

$\text{move}(C, 1) = \{\}$

$e\text{-closure}(\{\}) = \{\} = E$

$\text{move}(D, 0) = \{13\}$

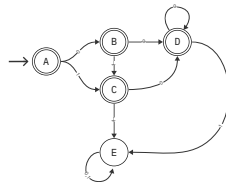
$e\text{-closure}(\{13\}) = \{12, 14\} = D$

$\text{move}(D, 1) = \{\}$

$e\text{-closure}(\{\}) = \{\} = E$

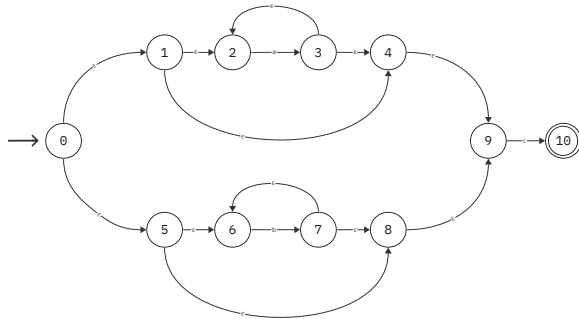
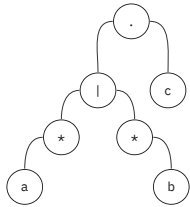
D-State

A



Autómata finito determinista

Expresión:  $(a^*|b^*)c$



Autómata finito no determinista

Autómata finito determinista

Símbolos:  $\{a,b,c\}$

$e\text{-closure}(\{0\}) = \{0,1,2,4,5,6,8,9\} = A$

$\text{move}(A, a) = \{3\}$

$e\text{-closure}(\{3\}) = \{2,3,4,9\} = B$

$\text{move}(A, b) = \{7\}$

$e\text{-closure}(\{7\}) = \{6,7,8,9\} = C$

$\text{move}(A, c) = \{10\}$

$e\text{-closure}(\{10\}) = \{10\} = D$

$\text{move}(B, a) = \{3\}$

$e\text{-closure}(\{3\}) = \{2,3,4,9\} = B$

$\text{move}(B, b) = \{\}$

$e\text{-closure}(\{\}) = \{\} = E$

$\text{move}(B, c) = \{10\}$

$e\text{-closure}(\{10\}) = \{10\} = D$

$\text{move}(C, a) = \{\}$

$e\text{-closure}(\{\}) = \{\} = E$

$\text{move}(C, b) = \{7\}$

$e\text{-closure}(\{7\}) = \{6,7,8,9\} = C$

$\text{move}(C, c) = \{10\}$

$e\text{-closure}(\{10\}) = \{10\} = D$

$\text{move}(D, a) = \{\} = E$

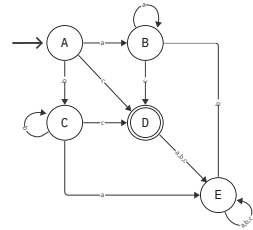
$\text{move}(D, b) = \{\} = E$

$\text{move}(D, c) = \{\} = E$

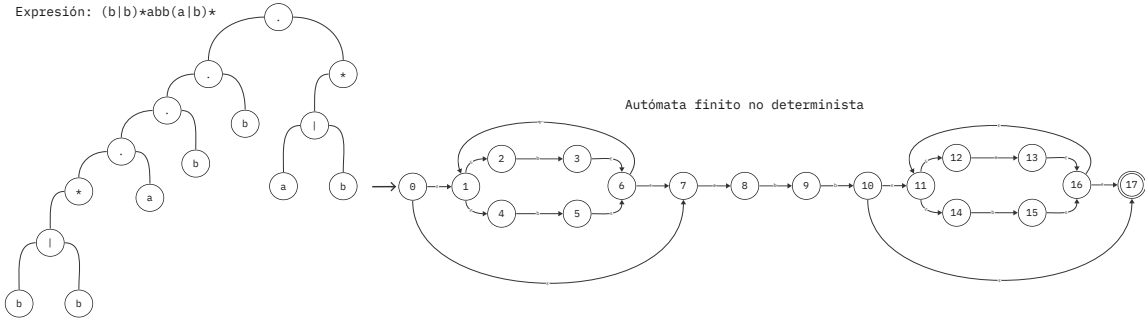
$\text{move}(E, a) = \{\} = E$

$\text{move}(E, b) = \{\} = E$

$\text{move}(E, c) = \{\} = E$



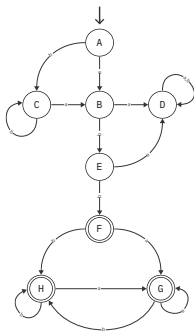
Expresión:  $(b|b)^*abb(a|b)^*$



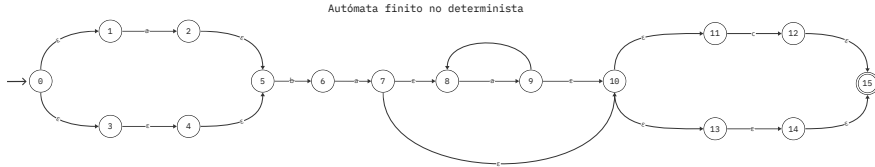
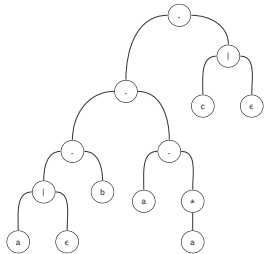
## Autómata finito determinista

Símbolos:  $\{a, b\}$

```
e-closure({0}) = {0,1,2,4,7} = A
  move(A, a) = {8}
e-closure({8}) = {8} = B
  move(A, b) = {3,5}
e-closure({3,5}) = {1,2,3,4,5,6,7} = C
  move(B, a) = {} = D
  move(B, b) = {9}
e-closure({9}) = {9} = E
  move(C, a) = {8}
e-closure({8}) = {8} = B
  move(C, b) = {3,5}
e-closure({3,5}) = {1,2,3,4,5,6,7} = C
  move(D, a) = {} = D
  move(D, b) = {} = D
  move(E, a) = {} = D
  move(E, b) = {10}
e-closure({10}) = {10,11,12,14,17} = F
  move(F, a) = {13}
e-closure({13}) = {11,12,13,14,16,17} = G
  move(F, b) = {15}
e-closure({15}) = {11,12,14,15,16,17} = H
  move(G, a) = {13}
e-closure({13}) = {11,12,13,14,16,17} = G
  move(G, b) = {15}
e-closure({15}) = {11,12,14,15,16,17} = H
  move(H, a) = {13}
e-closure({13}) = {11,12,13,14,16,17} = G
  move(H, b) = {15}
e-closure({15}) = {11,12,14,15,16,17} = H
```

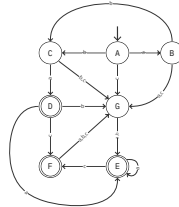


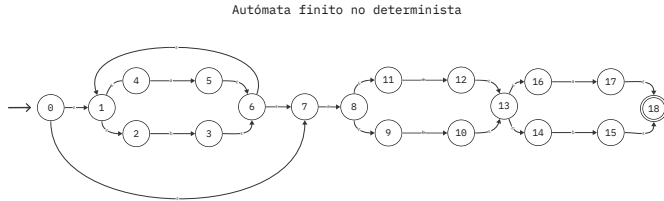
Expresión:  $(a|\epsilon)b(a+)c?$   
 Reescribiendo:  
 $(a|\epsilon)b(aa^*)(c|\epsilon)$



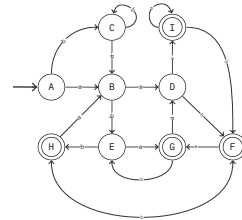
Autómata finito determinista  
 Símbolos: {a,b, c}

$e\text{-closure}(\{0\}) = \{0,1,3,4,5\} = A$   
 $\text{move}(A, a) = \{2\}$   
 $e\text{-closure}(\{2\}) = \{2, 5\} = B$   
 $\text{move}(A, b) = \{6\}$   
 $e\text{-closure}(\{6\}) = \{6\} = C$   
 $\text{move}(A, c) = \{\}$   
 $\text{move}(B, a) = \{\}$   
 $\text{move}(B, b) = \{6\}$   
 $e\text{-closure}(\{6\}) = C$   
 $\text{move}(B, c) = \{\}$   
 $\text{move}(C, a) = \{7\}$   
 $e\text{-closure}(\{7\}) = \{7,8,10,11,13,14,15\} = D$   
 $\text{move}(C, b) = \{\}$   
 $\text{move}(C, c) = \{\}$   
 $\text{move}(D, a) = \{9\}$   
 $e\text{-closure}(\{9\}) = \{8, 9, 10, 11, 13, 14, 15\} = E$   
 $\text{move}(D, b) = \{\}$   
 $\text{move}(D, c) = \{12\}$   
 $e\text{-closure}(\{12\}) = \{12, 15\} = F$   
 $\text{move}(E, a) = \{9\}$   
 $e\text{-closure}(\{9\}) = \{8, 9, 10, 11, 13, 14, 15\} = E$   
 $\text{move}(E, b) = \{\}$   
 $\text{move}(E, c) = \{12\}$   
 $e\text{-closure}(\{12\}) = \{12, 15\} = F$   
 $\text{move}(F, a) = \{\}$   
 $\text{move}(F, b) = \{\}$   
 $\text{move}(F, c) = \{\}$





Símbolos:  $\{a, b\}$



```

e-closure({0}) = {0,1,2,4,7} = A
move(A, a) = {5,8}
e-closure({5,8}) = {1,2,4,5,6,7,8,9,11} = B
move(A, b) = {3}
e-closure({3}) = {1,2,3,4,6,7} = C
move(B, a) = {5,8,12}
e-closure({5,8,12}) = {1,2,4,5,6,7,8,9,11,12,13,14,16} = D
move(B, b) = {3,10}
e-closure({3,10}) = {1,2,3,4,6,7,10,13,14,16} = E
move(C, a) = {5,8}
e-closure({5,8}) = {1,2,4,5,6,7,8,9,11} = B
move(C, b) = {3}
e-closure({3}) = {1,2,3,4,6,7} = C
move(D, a) = {5,8,12,17}
e-closure({5,8,12,17}) = {1,2,4,5,6,7,9,11,12,13,14,16,17,18} = I
move(D, b) = {3,10,15}
e-closure({3,10,15}) = {1,2,3,4,6,7,10,13,14,15,16,18} = F
move(E, a) = {5,8,17}
e-closure({5,8,17}) = {1,2,4,5,6,7,8,9,11,17,18} = G
move(E, b) = {3,15}
e-closure({3,15}) = {1,2,3,4,6,7,15,18} = H
move(F, a) = {5,8,17}
e-closure({5,8,17}) = {1,2,4,5,6,7,8,9,11,17,18} = G
move(F, b) = {3,15}
e-closure({3,15}) = {1,2,3,4,6,7,15,18} = H
move(G, a) = {5,8,12}
e-closure({5,8,12}) = {1,2,4,5,6,7,8,9,11,12,13,14,16} = D
move(G, b) = {3,10}
e-closure({3,10}) = {1,2,3,4,6,7,10,13,14,16} = E
move(H, a) = {5,8}
e-closure({5,8}) = {1,2,4,5,6,7,8,9,11} = B
move(H, b) = {3}
e-closure({3}) = {1,2,3,4,6,7} = C
move(I, a) = {5,8,12,17}
e-closure({5,8,12,17}) = {1,2,4,5,6,7,9,11,12,13,14,16,17,18} = I
move(I, b) = {3,10,15}
e-closure({3,10,15}) = {1,2,3,4,6,7,10,13,14,15,16,18} = F

```