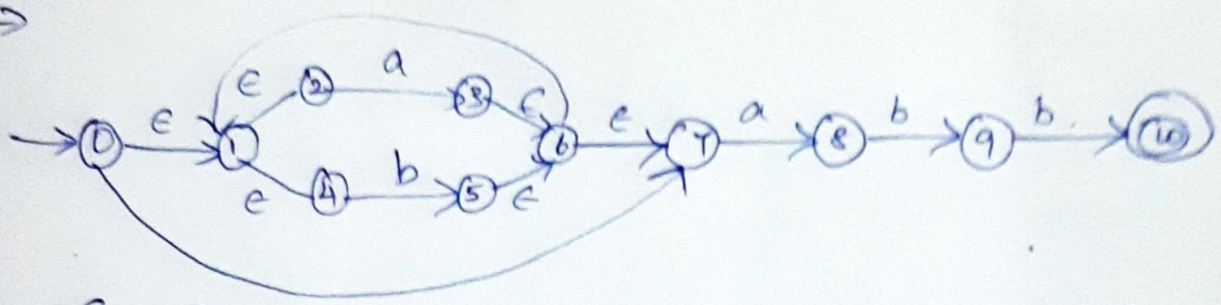
Conversion of RE to ε-NFA into DFA:

(a/b)* abb.

→




ε-closure (0), A = {0, 1, 2, 4, 7}.

The i/p symbol alphabet is {a, b}.

$\delta(A, a)$ = ε-closure({0, 1, 2, 4, 7}, a)
= ε-closure({3, 8})
= {1, 2, 3, 4, 6, 7, 8} → (B).

$\delta(A, b)$ = ε-closure({0, 1, 2, 4, 7}, b)
= ε-closure({5}) — c. subset({5, 6, 7, 1, 2, 4})

$\delta(B, a)$ = ε-closure({1, 2, 3, 4, 6, 7, 8}, a).
= ε-closure({3, 8}) — (B).

$\delta(B, b)$ = ε-closure({1, 2, 3, 4, 6, 7, 8}, b).
= ε-closure({5, 9}) = {1, 2, 4, 5, 6, 7, 9}) — (D)

$\delta(C, a)$ = ε-closure({5, 6, 7, 1, 2, 4}, a)
= ε-closure({8, 3)} — (B).

$\delta(C, b)$ = ε-closure({5, 6, 7, 1, 2, 4}, b)
= ε-closure({5}). — (C).

$\delta(D, a)$ = ε-closure({{1, 2, 4, 5, 6, 7, 9} a)
= ε-closure {3, 8} — B.

$\delta(D, b)$ = ε-closure({1, 2, 4, 5, 6, 7, 9}, b)
= ε-closure({5, 10} = {1, 2, 4, 5, 6, 7, 10} — (E).

$\delta$ (D, a) to $\epsilon$-closure{(E, a)}

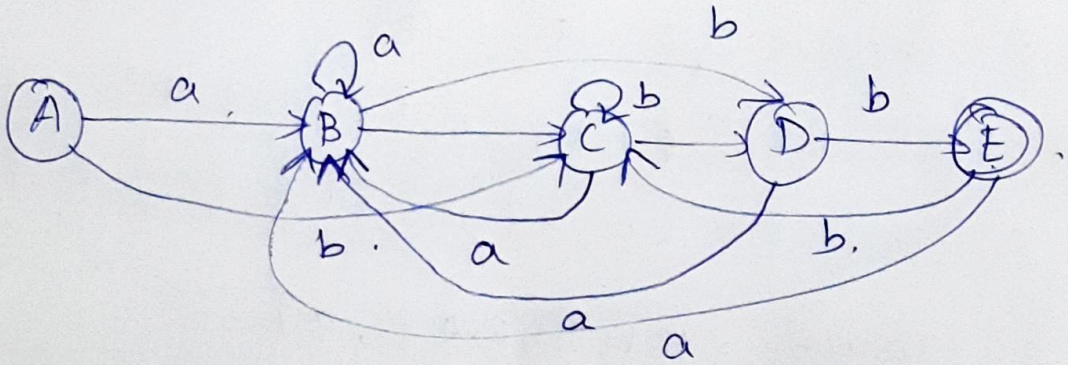
$\delta(E, a) = \epsilon\text{-closure}(\{1, 2, 4, 5, 6, 7, 16\}), a)$

$= \epsilon\text{-closure}(3, 8) \rightarrow (B)$.

$\delta(E, b) = C$.

Transition-Table

| States. | I/P symbol. | |
|---|---|---|
| | a | b |
| → A | B | C |
| B | B | D |
| C | B | C |
| D | B | E |
| * E | B | C. |




Eg:-

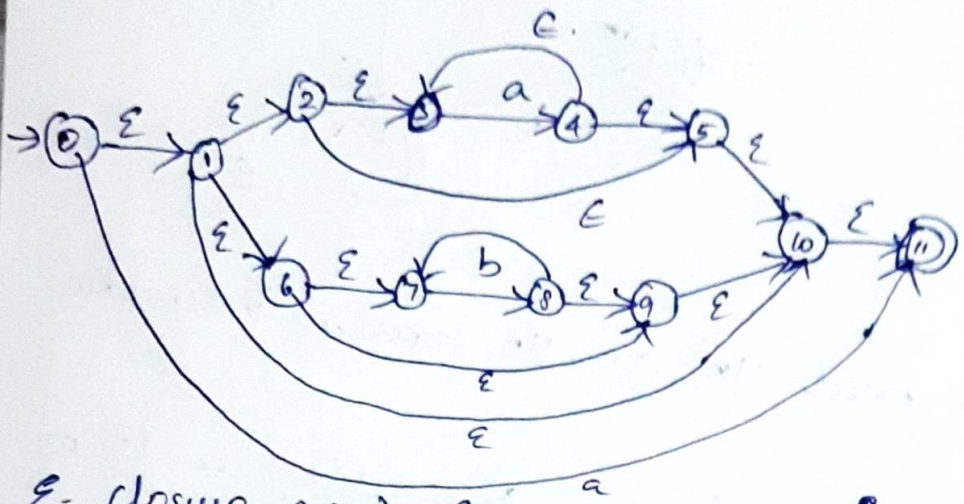
1). $(a|b)^*$

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

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

Conversion of RE to ε-NFA into DFA. (4)

R.E $(a^*/b^*)^*$




ε- closure A(0) = {0, 1, 2, 5, 10, 6, 9, 11, 3, 7}.

The I/P symbol is {a, b}.

ε- closure (move (A, a)) → δ(A, a)

= ε- closure ({0, 1, 2, 3, 5, 6, 7, 9, 10, 11}, a)

= ε- closure {4} → {4, 5, 10, 11, 1, 2, 3, 6, 7, 9} — (B)

δ(A, b) = ε- closure ({0, 1, 2, 3, 5, 6, 7, 9, 10, 11}, b)

= ε- closure {8} — (C) → {1, 2, 3, 5, 6, 8, 9, 10, 11}.

δ(B, a) = ε- closure ({1, 2, 3, 4, 5, 6, 7, 9, 10, 11,} a)

= ε- closure {4} — (B)

δ(B, b) = ε- closure [{1, 2, 3, 4, 5, 6, 7, 9, 10, 11}, b}

= ε- closure {8} — (C).

δ(C, a) = ε- closure ({1, 2, 3, 5, 6, 8, 9, 10, 11}, a)

= ε- closure {A} — (B).

δ(C, b) = ε- closure ({1, 2, 3, 5, 6, 8, 9, 10, 11}, b)

= ε- closure {8} — (C).

Start State (A)

Finial state (A, B, C).

Transition Table.

| | a | b |
|---|---|---|
| →*A | B | C |
| *B | B | C |
| *C | B | C |