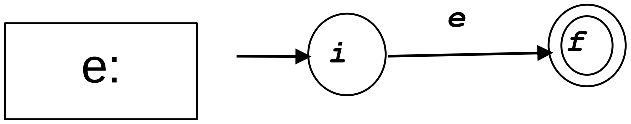
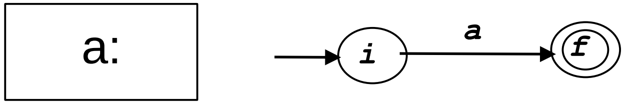
Constructia unui AFN pornind de la o ER

e este o expresie regulata care descrie multimea regulata ***{e}***;



a $\in$ ***Σ*** este o expresie regulata care descrie multimea regulata ***{a}***;

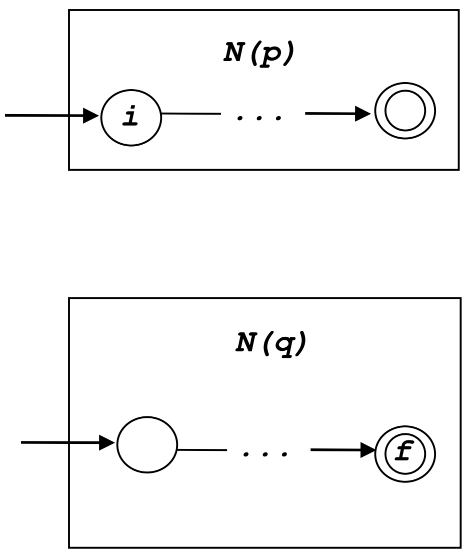


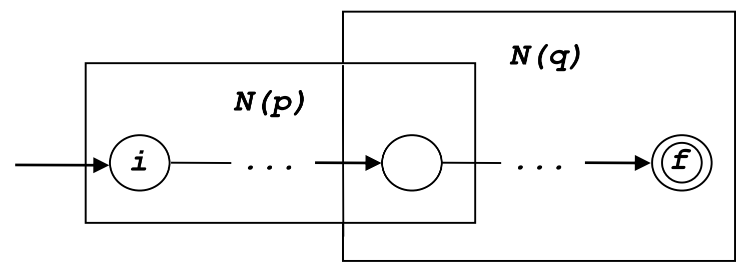
Constructia unui AFN pornind de la o ER

daca ***p***,***q*** sunt expresii regulate care descriu multimile regulate ***P***, respectiv ***Q*** atunci :

(pq) este o expresie regulata care descrie multimea regulata **PQ**;

pq:

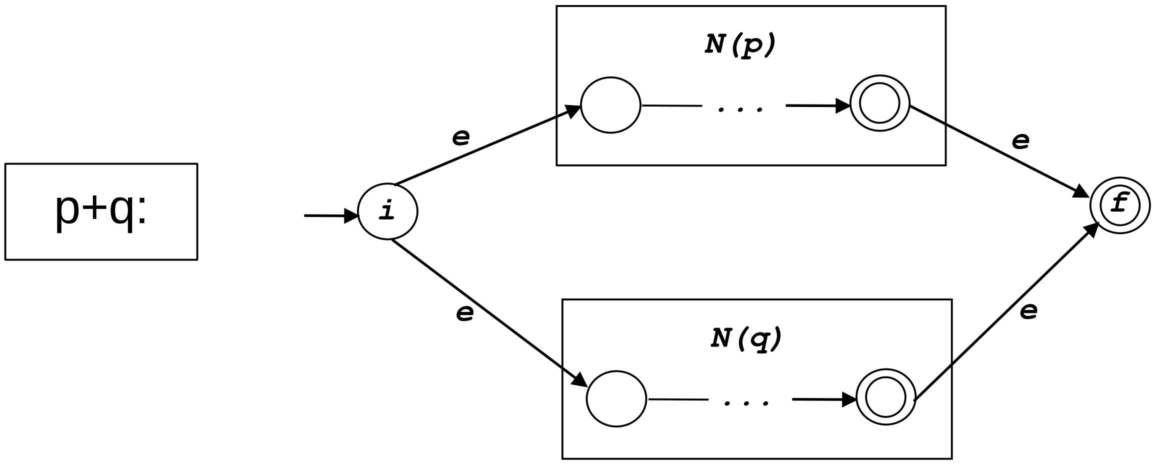




Constructia unui AFN pornind de la o ER

daca ***p***,***q*** sunt expresii regulate care descriu multimile regulate ***P***, respectiv ***Q*** atunci :

(p + q) este o expresie regulata care descrie multimea regulata ***P U Q***;

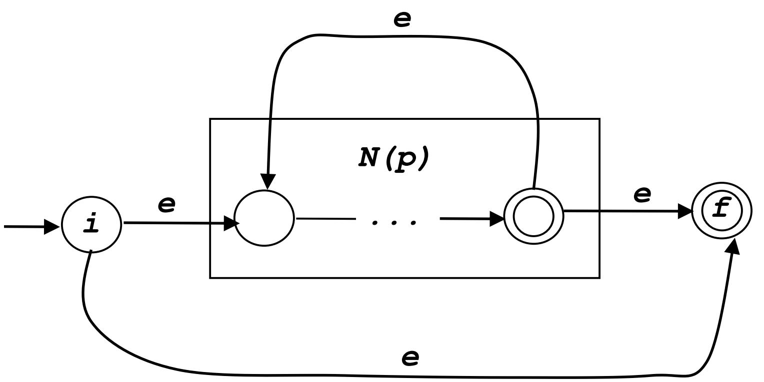


Constructia unui AFN pornind de la o ER

daca ***p*** expresie regulata care descrie multimea regulata ***P*** atunci :

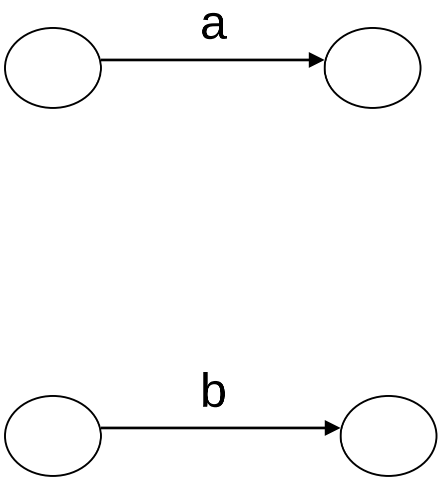
(p)* expresie regulata care descrie mulţimea regulata ***P****.

p*:

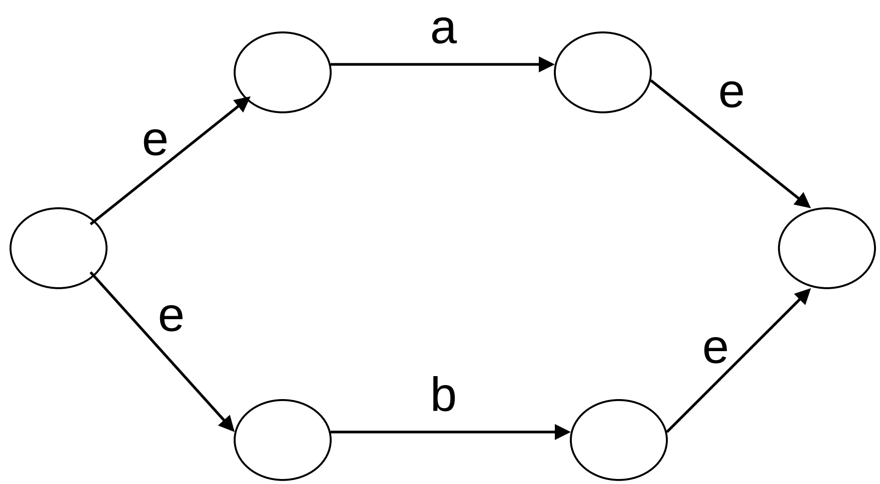


ER → AFN

(a+b)* : constructia AFN

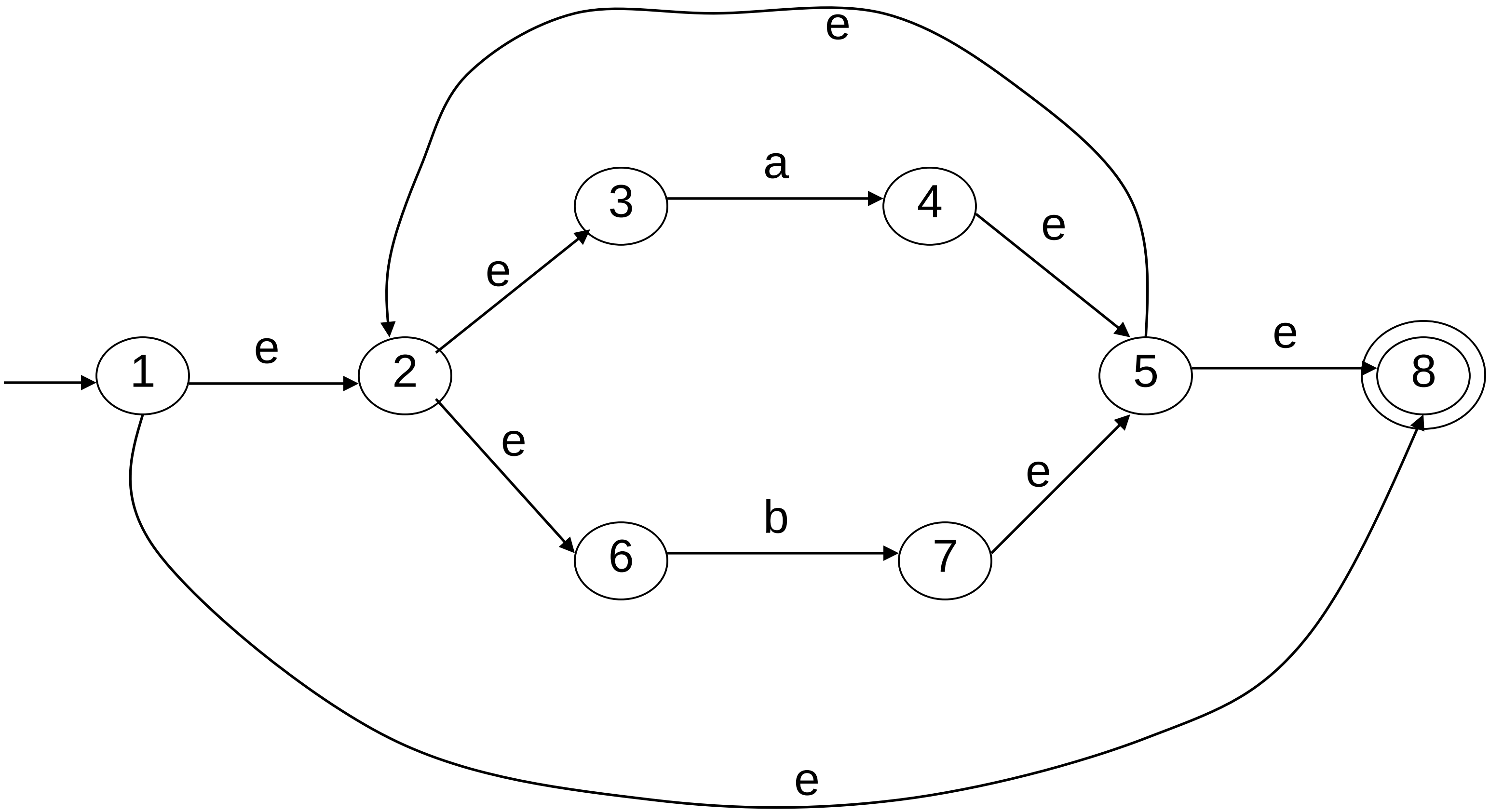


ER → AFN



ER → AFN

AFN: (a+b)*



Conversia unui AFN intr-un AFD

- ***e-închidere : P(Q) → P(Q)***

- ***mutare : P(Q) x Σ → P(Q)***

Conversia unui AFN intr-un AFD

- ***e-închidere : P(Q) → P(Q)***

$$\text{e-închidere}(Q') = \bigcup_{s \in Q'} \text{e-inchidere}(\{s\})$$

$\text{e-inchidere}(\{s\}) = \{s\}$, daca $s \in Q$ este o stare care nu are e-tranzitii

$$\text{e-inchidere}(\{s\}) = \bigcup_{s' \in m(s,e)} \text{e-inchidere}(\{s'\}) \cup \{s\}$$

Conversia unui AFN intr-un AFD

- $\boldsymbol{mutare : P(Q) \times \Sigma \rightarrow P(Q)}$

$$mutare(Q',a) = \bigcup_{s' \in m(s,a)} m(s,a)$$

Calcul e-inchidere(Q')

$A = Q', B = \emptyset$

cat timp $A \setminus B \neq \emptyset$ execută

fie $t \in A \setminus B$

$B = B \cup \{t\}$

pentru fiecare $u \in Q$ astfel incat

$m(t,e) = u$ executa

$A = A \cup \{u\}$

■

■

e-inchidere(Q') = A

Constructia AFD

stari_AFD = {e-inchidere({q_0})}

A = $\emptyset$

cat timp stari_AFD \ A $\neq \emptyset$ executa

  fie t $\in$ stari_AFD \ A

  A = A $\cup$ {t}

  pentru fiecare a $\in \Sigma$ executa

    B = e-inchidere(mutare(t,a))

    stari_AFD = stari_AFD $\cup$ {B}

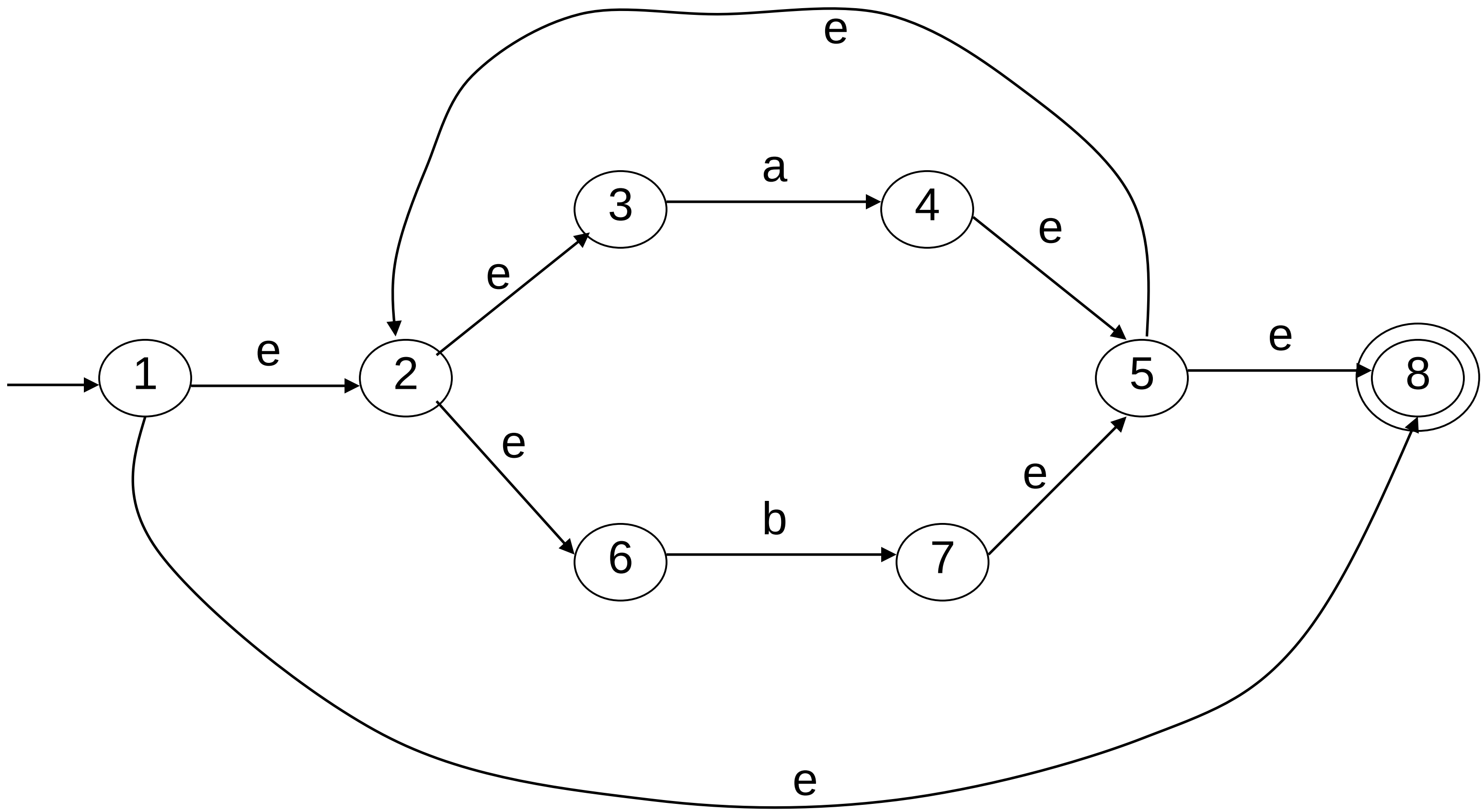
    tranz_AFD[t,a] = B

  ▪

▪

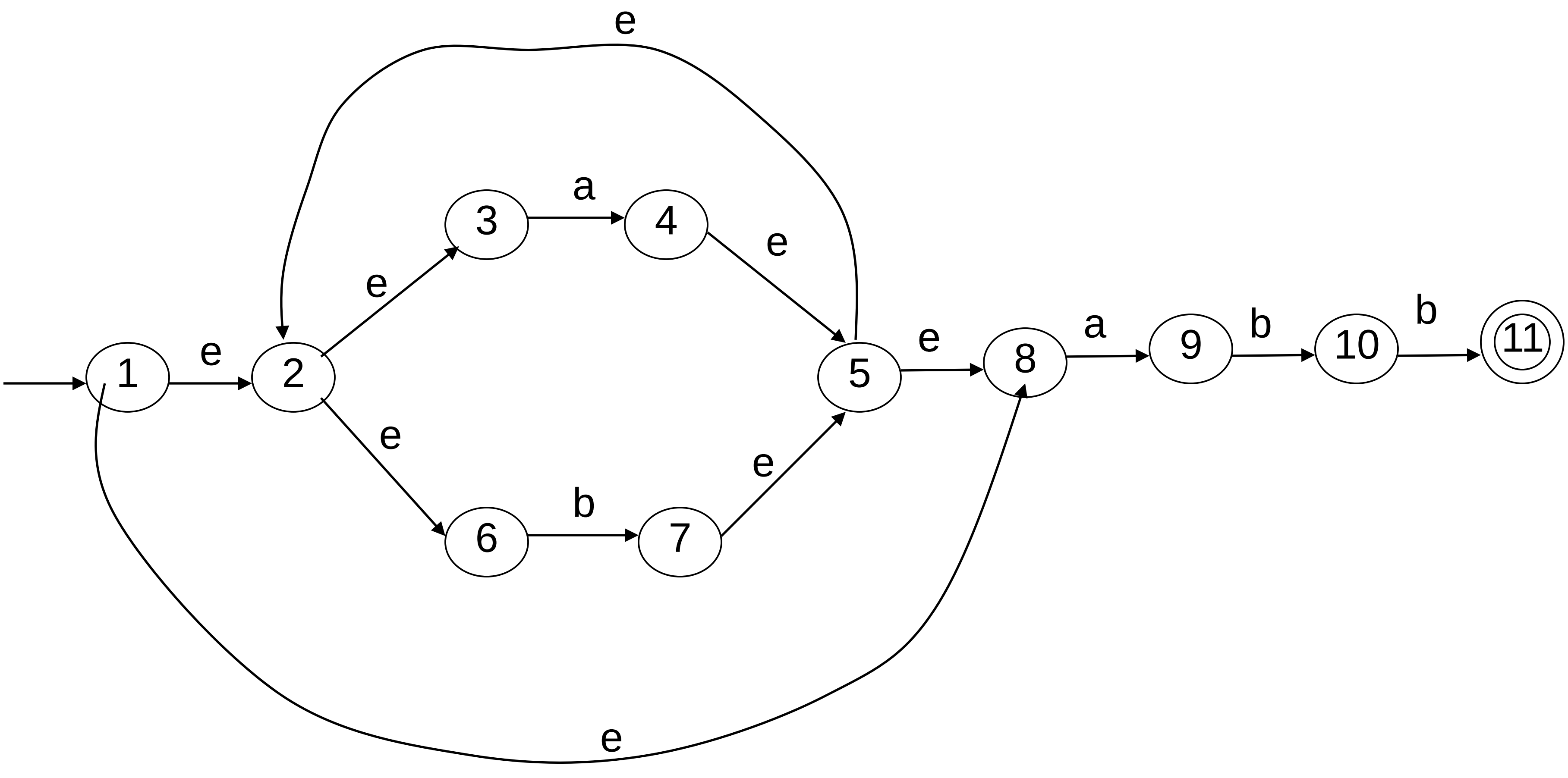
Exemplu 1

AFN: (a+b)*



Exemplu 2

AFN: (a+b)*abb



Constructia AFD pornind de la o ER

firstpos(ER) = multimea codurilor frunzelor corespunzatoare pozitiilor de inceput pentru subsirurile care pot sa fie generate de catre expresia regulata corespunzatoare.

ER = (a|b)*abb
1 2 3 4 5

firstpos(ER) = {1, 2, 3}

Constructia unui AFN pornind de la o ER

lastpos(ER) = setul codurilor frunzelor corespunzatoare pozitiei de sfarsit pentru subsirurile care pot sa fie generate de catre expresia regulata corespunzătoare.

ER = (a|b)*abb
        1 2   3 4 5

lastpos(ER) = {5}

➔ (a|b)*abb#

Constructia unui AFN pornind de la o ER

followpos: ***C*** $\rightarrow$ ***P(C)***

followpos(i) = multimea codurilor j care apar dupa simbolul cu codul i in sirurile generate de expresia regulata

(a|b)*abb#
 1 2 3 4 5 6

		followpos(i)
	1	{1,2,3}
	2	{1,2,3}
	3	{4}
	4	{5}
	5	{6}
	6	-

Constructia unui AFD pornind de la o ER

stari_AFD = { first_pos(ER) }

$A = \emptyset$

cat timp stari_AFD \ $A \neq \emptyset$ execută

  fie $t \in$ stari_AFD \ A

  $A = A \cup \{t\}$

  pentru fiecare $a \in \Sigma$ execută

    $X = \cup$ { followpos(p) | $c^{-1}(p) = a$}

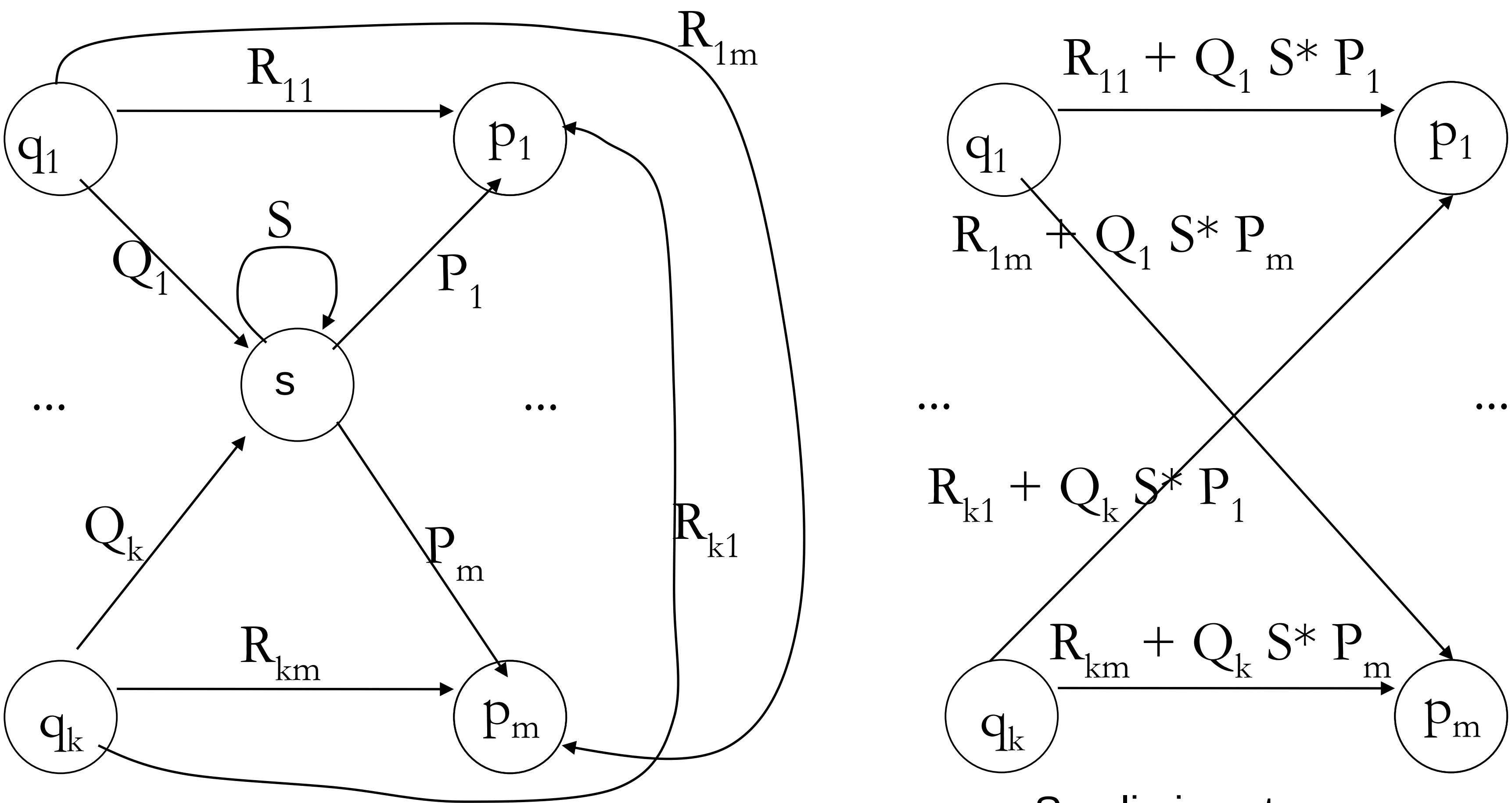
    $p \in t$

    daca $X \neq \emptyset$

      stari_AFD = stari_AFD $\cup$ {X}

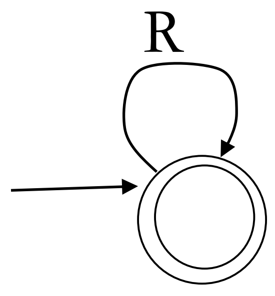
      tranz_AFD(t,a) = X

Constructia ER pornind de la AF prin eliminarea starilor

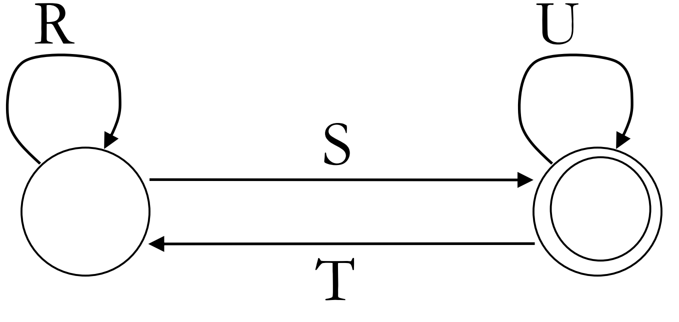


Se elimina starea s

Constructia ER pornind de la AF prin eliminarea starilor



ER: R*



ER: (R + SU*T)*SU*

Exemplu