

Echivalenta dintre expresiile regulate si limbajele acceptate de AF

Teorema:

Daca r este o expresie regulara, atunci exista un AF care accepta multimea secventelor reprezentate de aceasta expresie (multimea regulara). Si reciproc.

- Echivalenta:
 - constructia automatului echivalent pentru fiecare dintre constructiile de mai sus (nu vom face dem.)
 - constructia expresiei regulate ce descrie limbajul acceptat de un automat (nu vom face dem.)
- (\rightarrow ~ seminar)

Expresie regulara

=> limbaj acceptat de AF

- Expresii regulate

- \emptyset

- ε

- a daca: $a \in \Sigma$

- $r+s$ daca r,s – expresii regulate

- rs daca r,s – expresii regulate

- r^* daca r – expresie regulara

- Constructia automatului echivalent

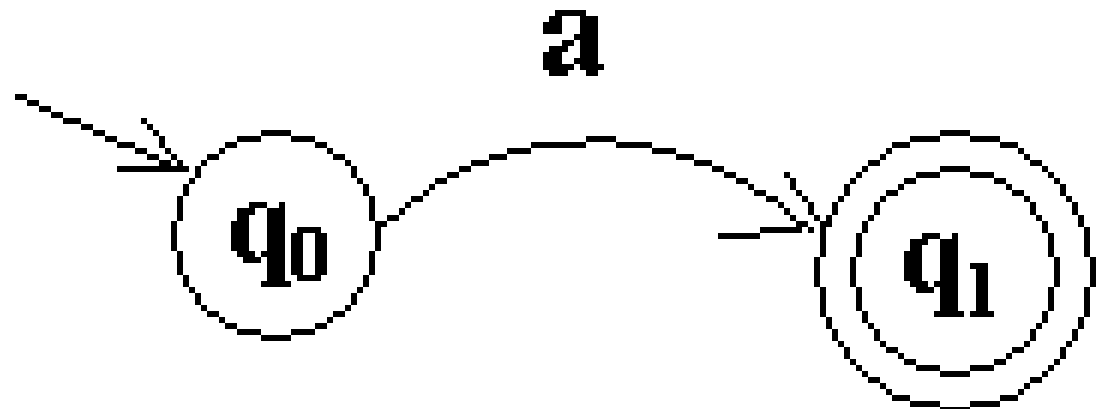
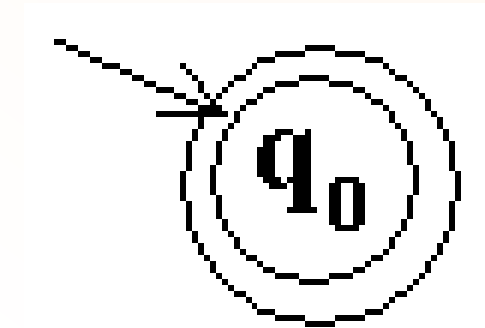
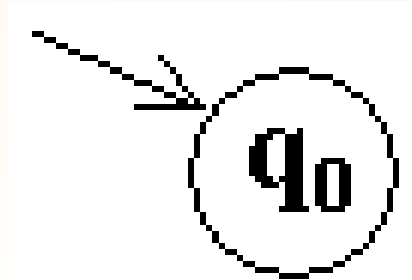
pentru fiecare dintre constructiile de mai sus



Ne amintim!

Expresie regulara=> limbaj acceptat de AF

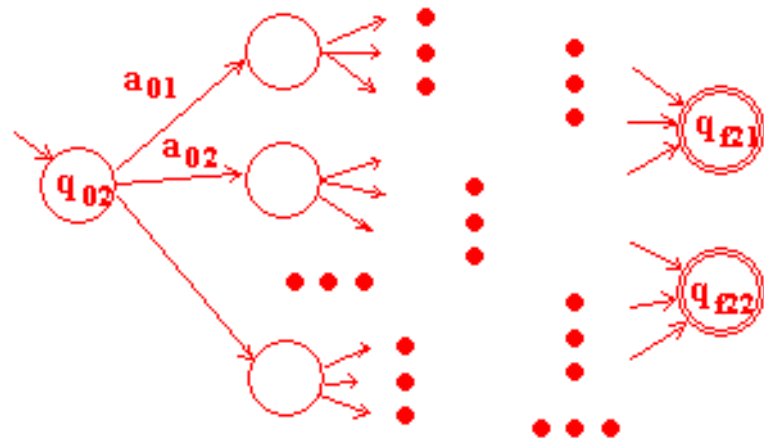
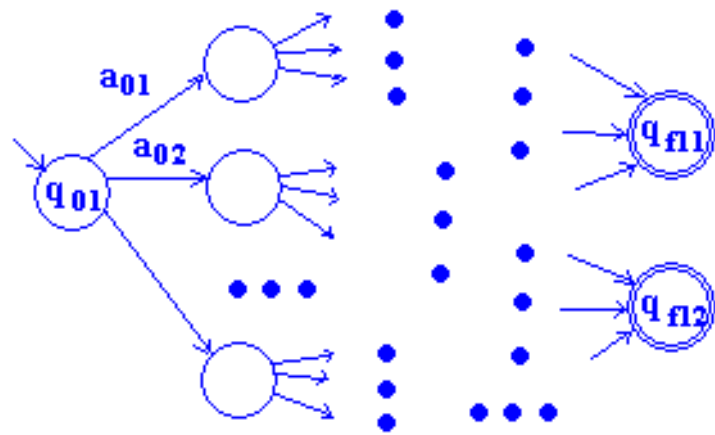
- Automatul ce accepta: Φ
- Automatul ce accepta: ε
- Automatul ce accepta: a (daca: $a \in \Sigma$)



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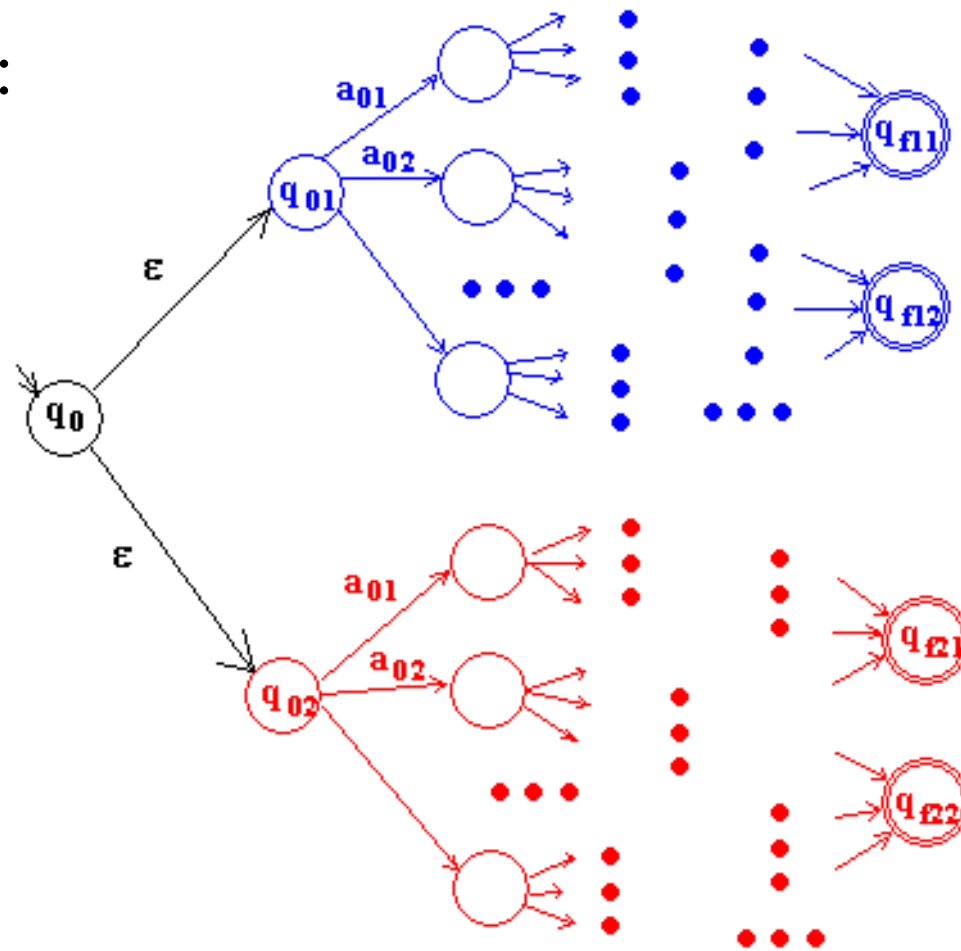
- Automatul ce accepta reuniunea limbajelor acceptate de doua automate date

— se dau:





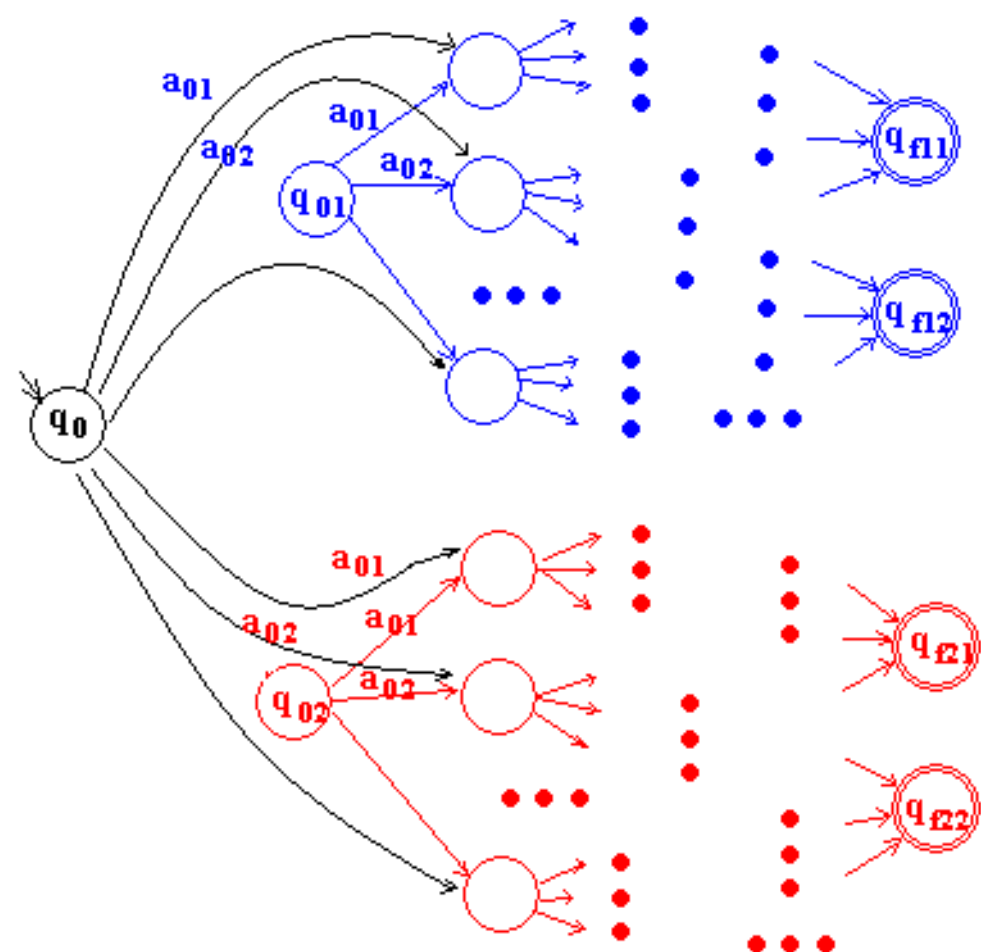
- Automatul ce accepta reuniunea limbajelor acceptate de doua automate date
 - AF cu ϵ tranz.:





- Automatul ce accepta reuniunea limbajelor acceptate de doua automate date

– AF

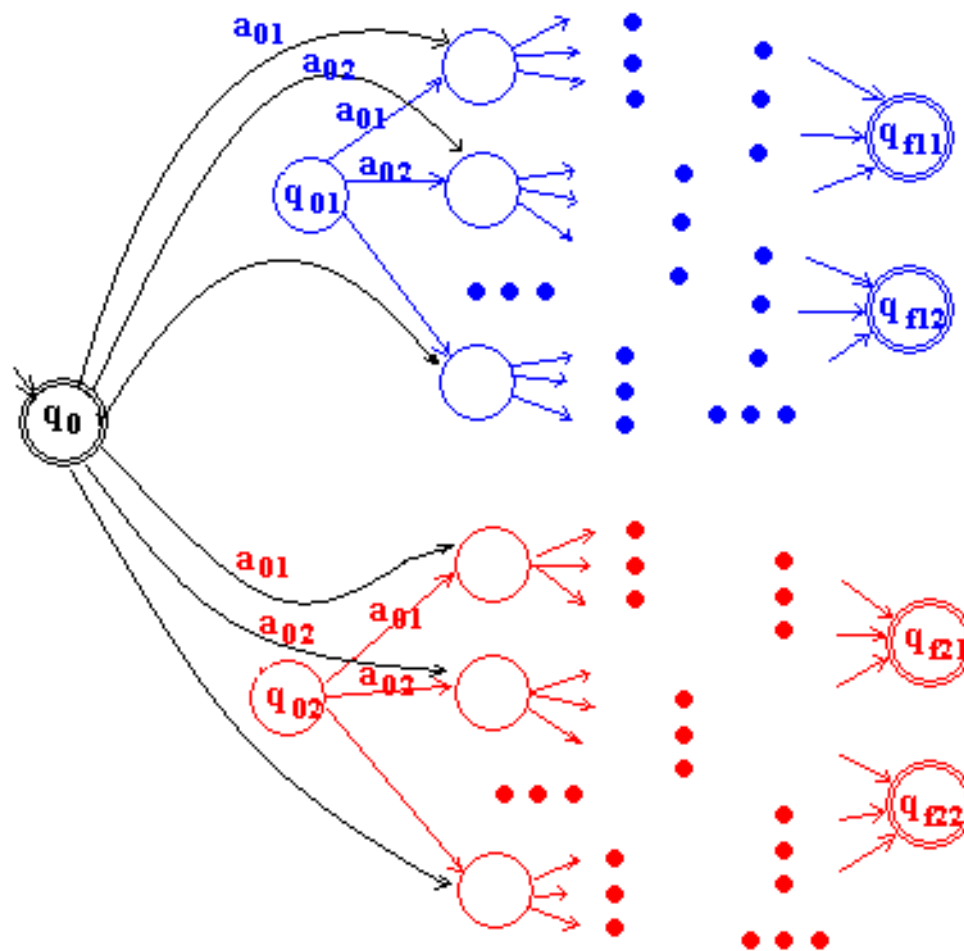


??! cel putin una
dintre q_{01} sau q_{02}
e stare finala

-
- Automatul ce accepta reuniunea limbajelor acceptate de doua automate date

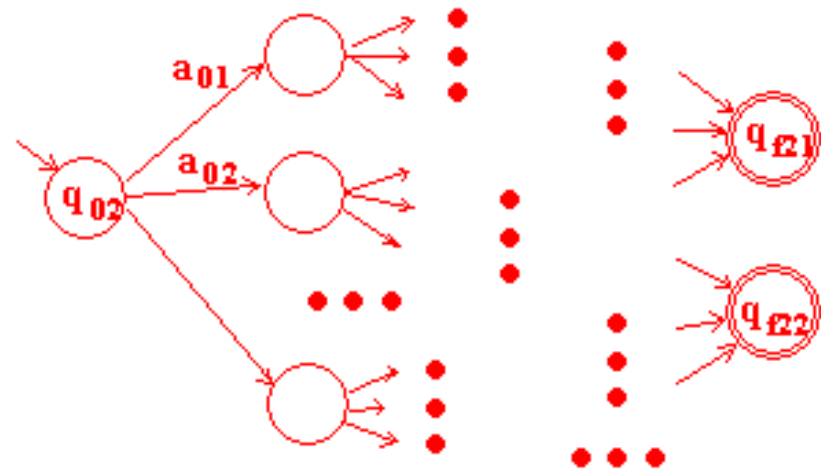
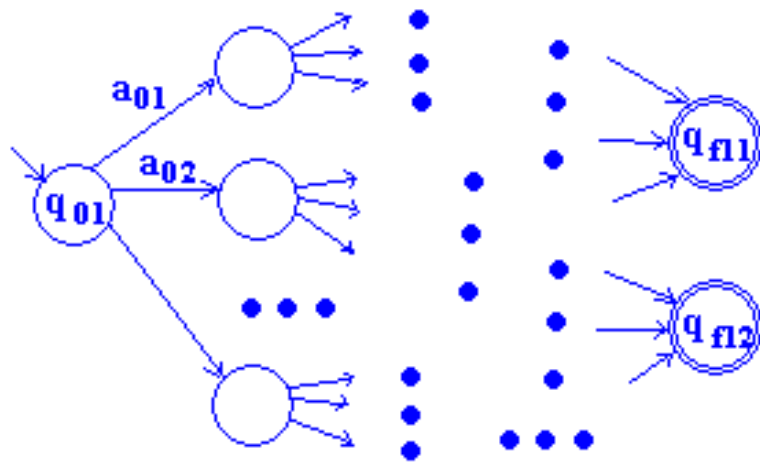
– AF

Daca cel putin una dintre q_{01} sau q_{02} este stare finala



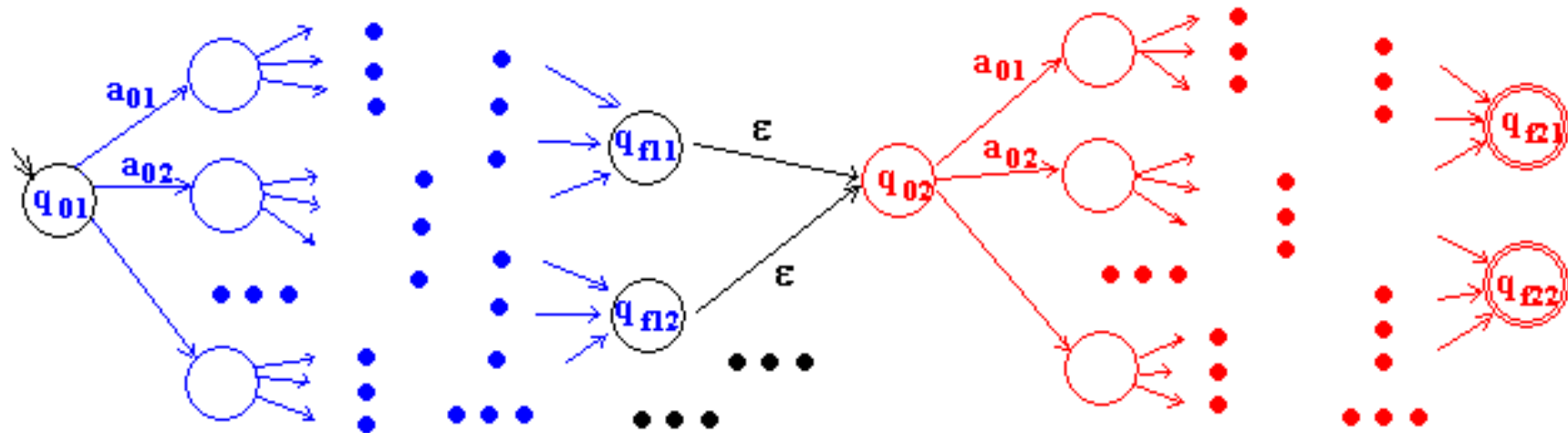
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- Automatul ce accepta concatenarea limbajelor acceptate de doua automate date
 - se dau



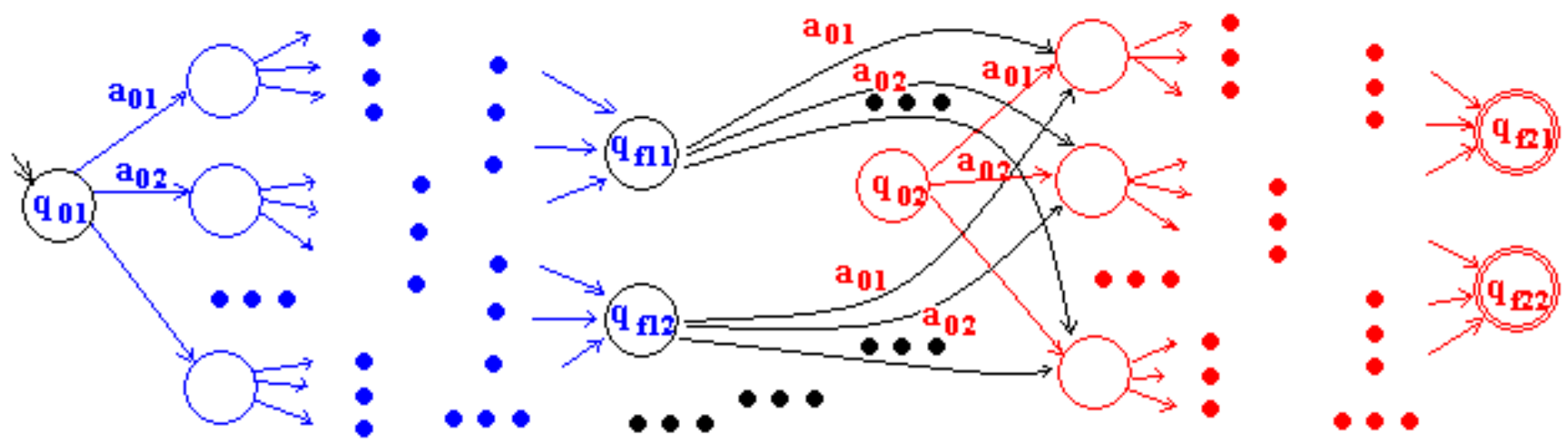
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- Automatul ce accepta concatenarea limbajelor acceptate de doua automate date
 - AF cu ϵ tranz.:



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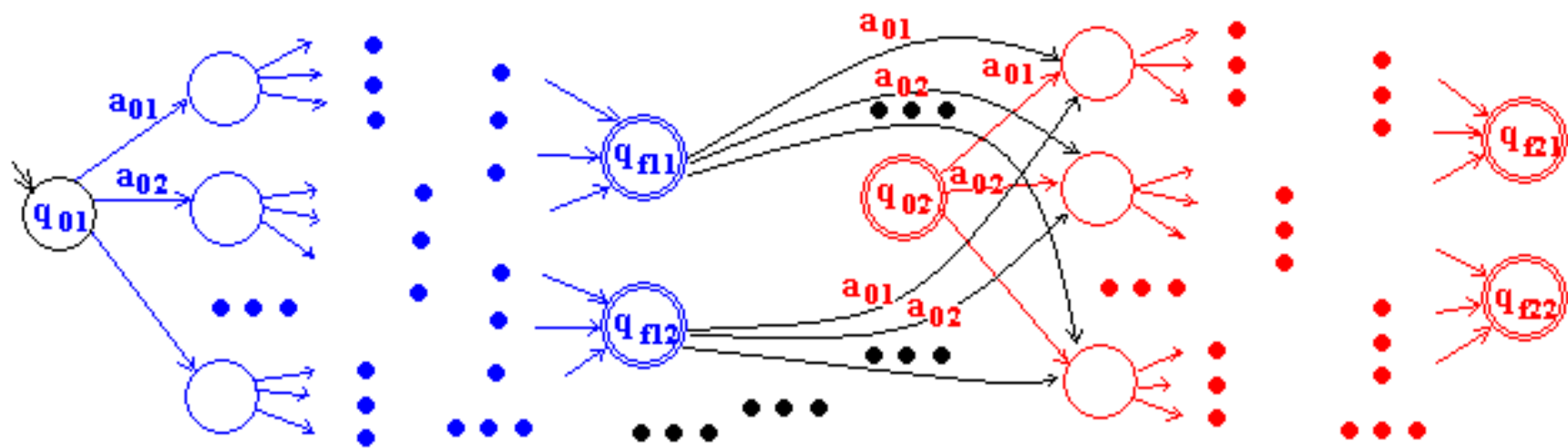
- Automatul ce accepta concatenarea limbajelor acceptate de doua automate date
 - AF



??! q_{02} stare finala

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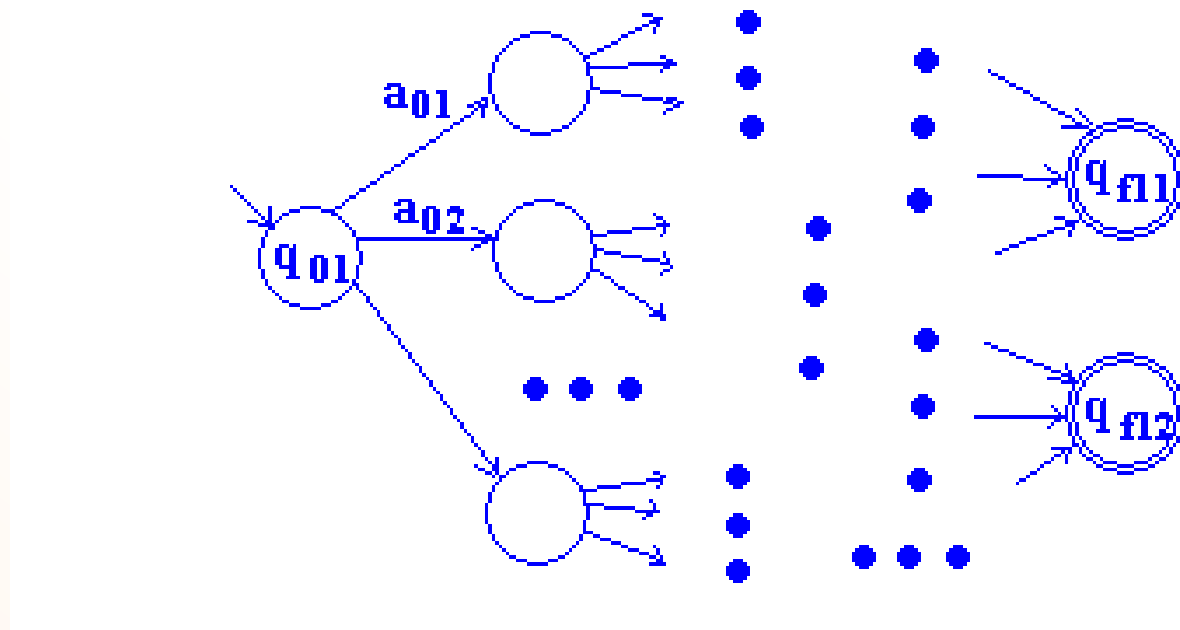
- Automatul ce accepta concatenarea limbajelor acceptate de doua automate date
 - AF



Daca q_{02} stare finala

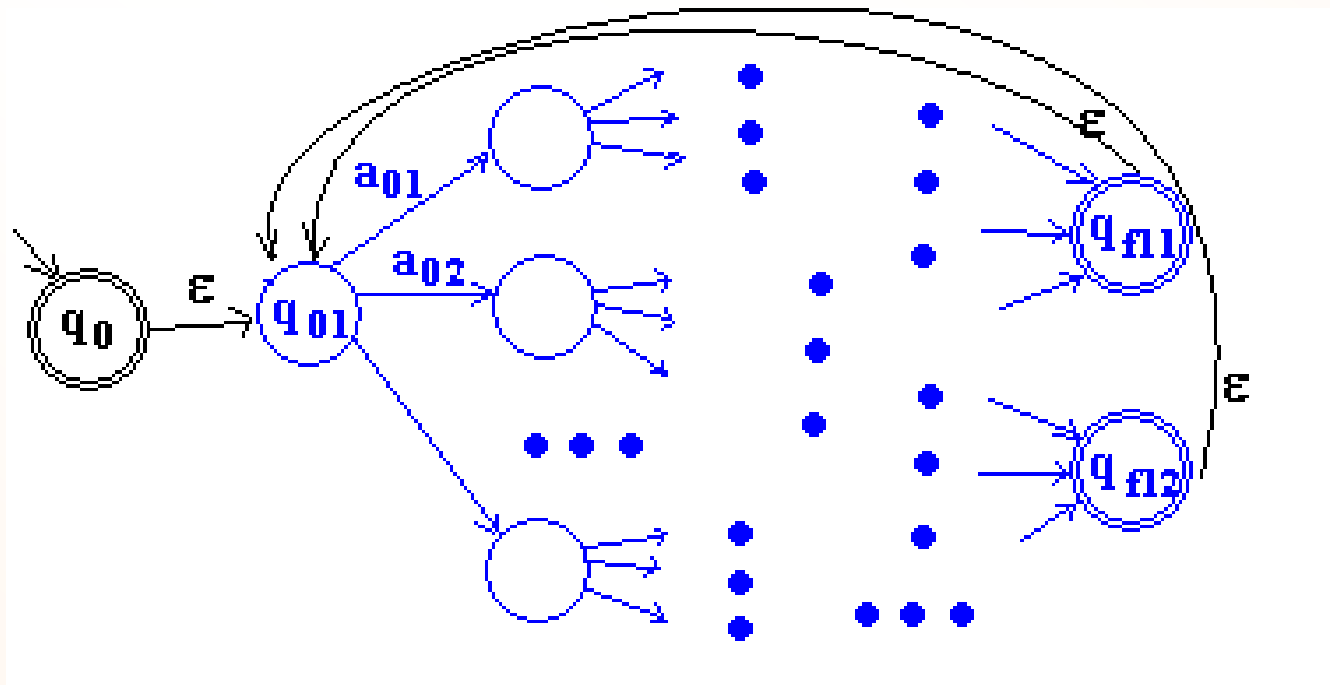
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- Automatul ce accepta orice secventa peste limbajul acceptat de un automat dat
 - se da:



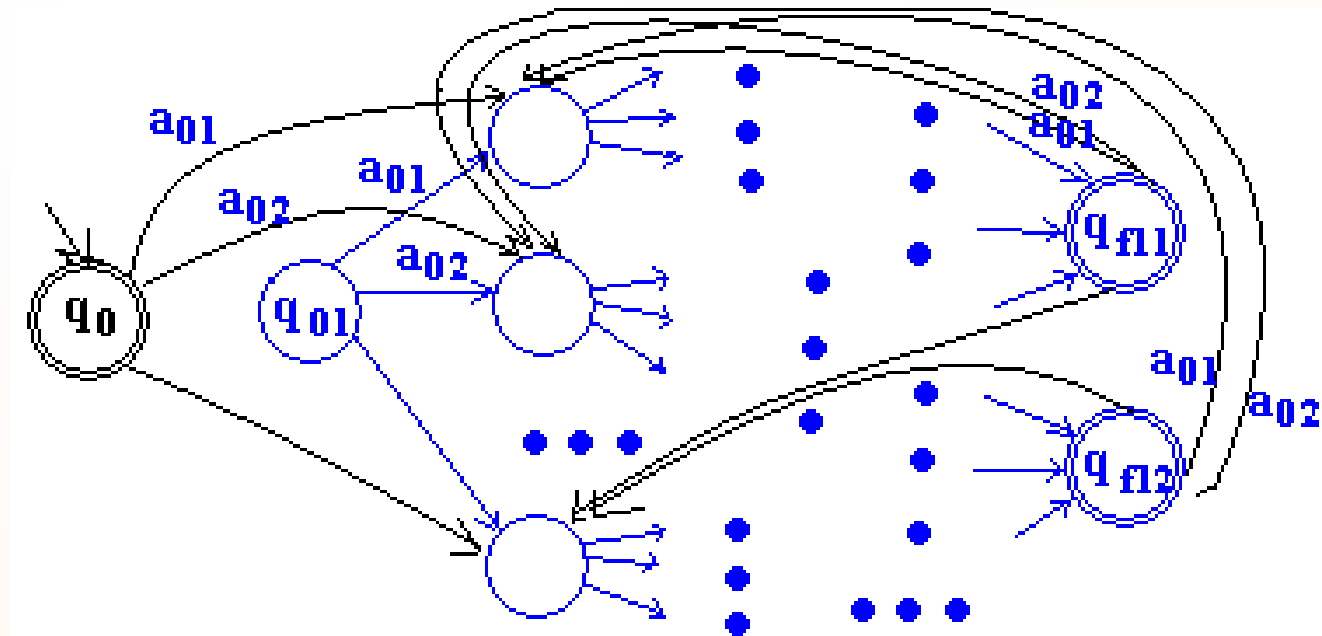
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- Automatul ce accepta orice secventa peste limbajul acceptat de un automat dat
 - AF cu ϵ tranz.:



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- Automatul ce accepta orice secventa peste limbajul acceptat de un automat dat
 - AF:



??! q_{01} stare finala OK !

Exercitii:

Expresie regulara=> limbaj acceptat de AF

- Automatul ce accepta reuniunea limbajelor acceptate de doua automate date
 - se considera AF pt.:
 - aa^*
 - bb^*
 - se considera AF pt.:
 - a^{2n} n – nr. natural; $n \geq 0$
 - b^{2n+1} n – nr. natural; $n \geq 0$

Exercitii:

Expresie regulara=> limbaj acceptat de AF

Construiti automatul ce accepta concatenarea limbajelor acceptate de doua automate date.

a) Se considera AF pt.: a si b

b) Se considera AF pt.: a^* si b^*

c) Se considera AF pt.: a si b^*

Exercitii:

Expresie regulara=> limbaj acceptat de AF

- Automatul ce accepta orice secventa peste limbajul acceptat de un automat dat
 - se considera AF pt.: a