

Predmet: AUTOMATI I FORMALNI JEZICI

DOMAĆA ZADAĆA br.01

Mujkić Daris

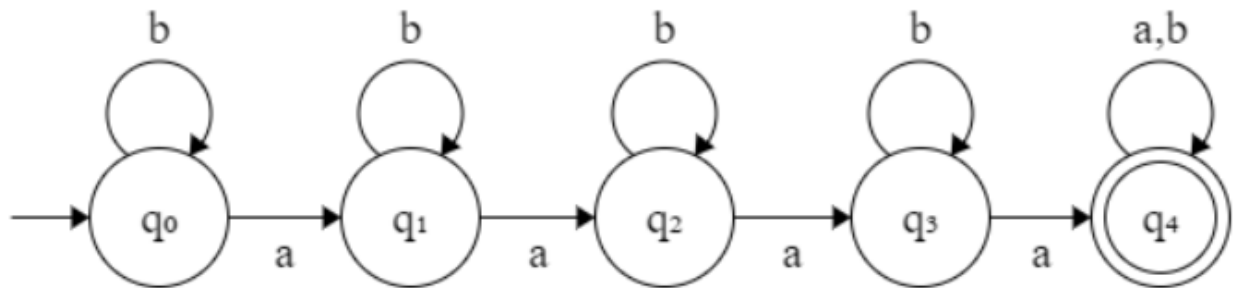
Broj indeksa: 19413

Lista urađenih zadataka:

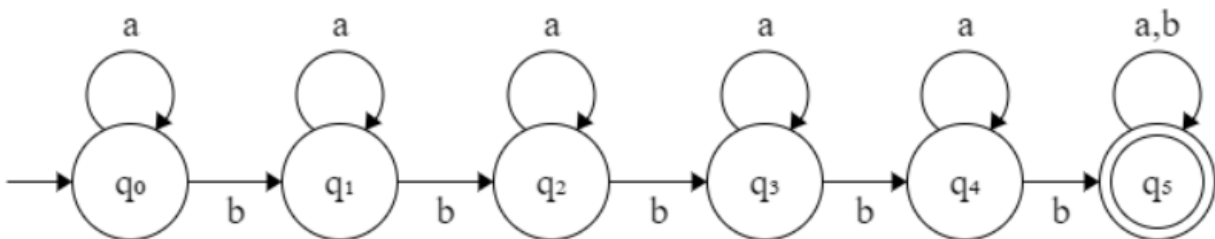
1	2	3	4	5	6	7	8	9	10	11	12	13
4/4	5/5	2/2	2/2	2/2	3/3	5/5	1/1	1/1	1/1	1/1	1/1	1/1

Zadatak 1.

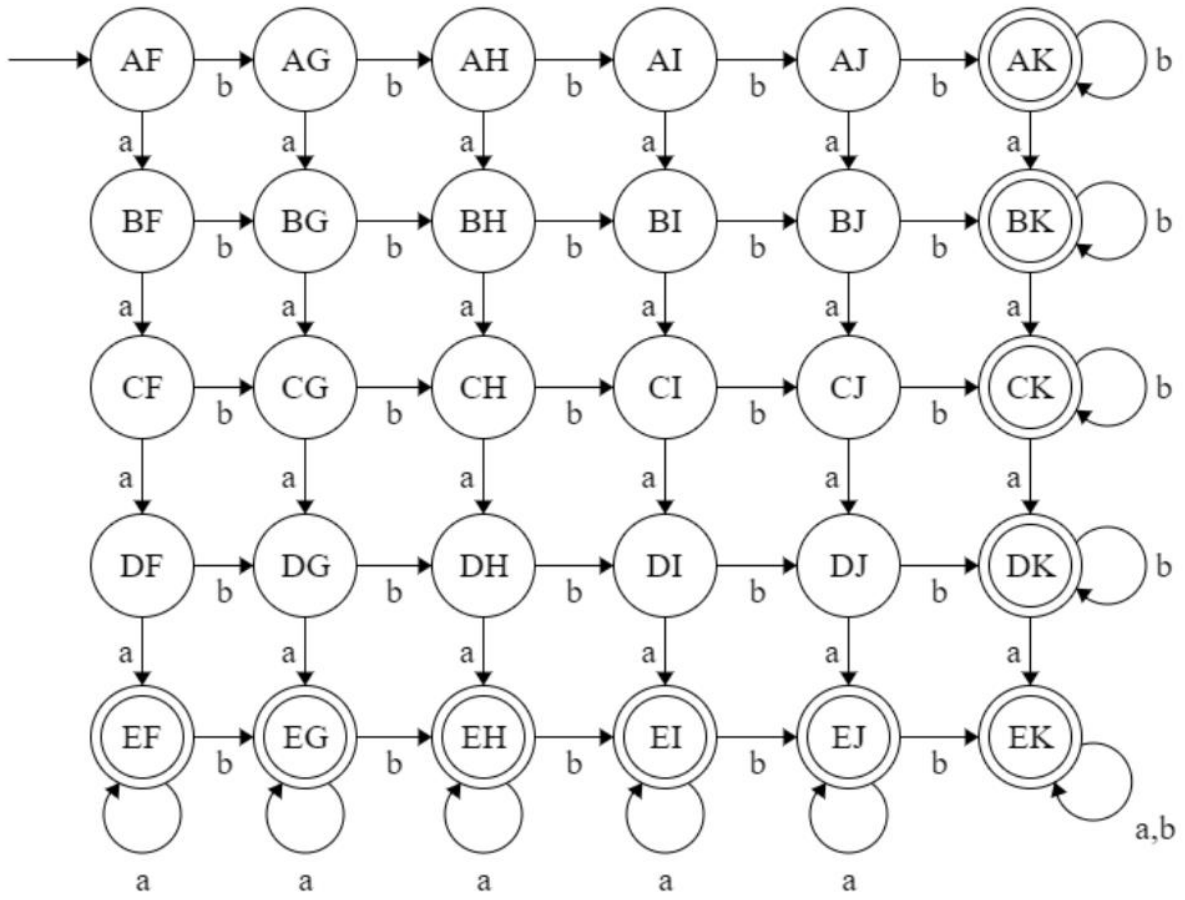
a)



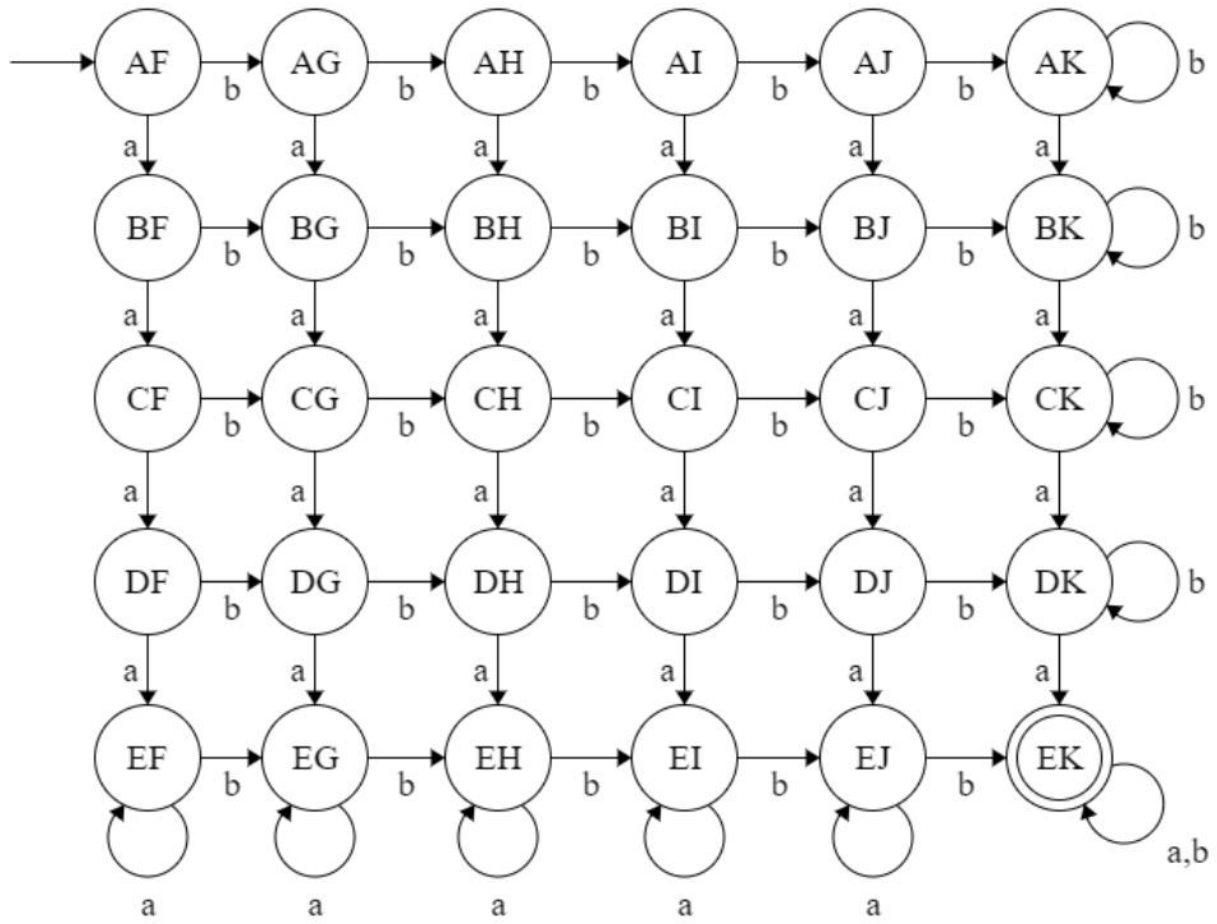
b)



c)

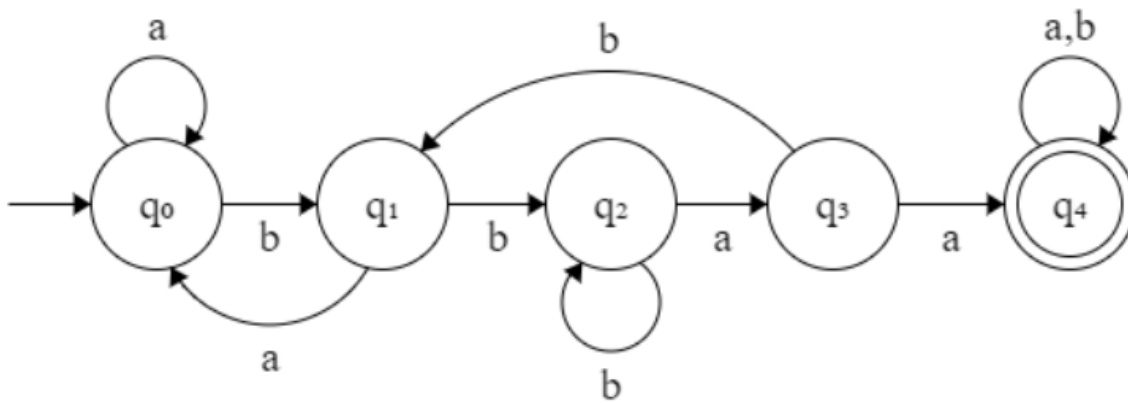


d)

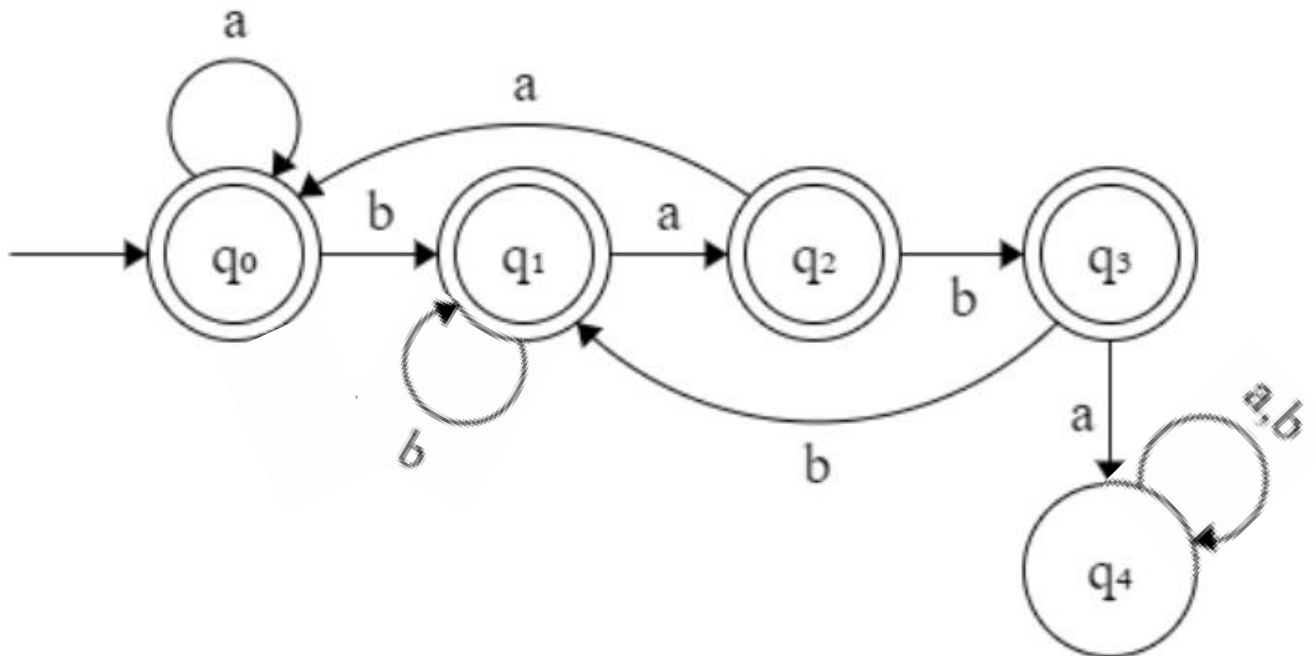


Zadatak 2.

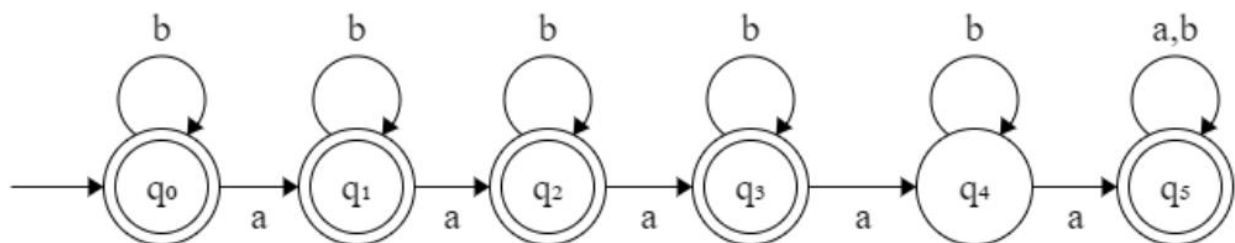
a)



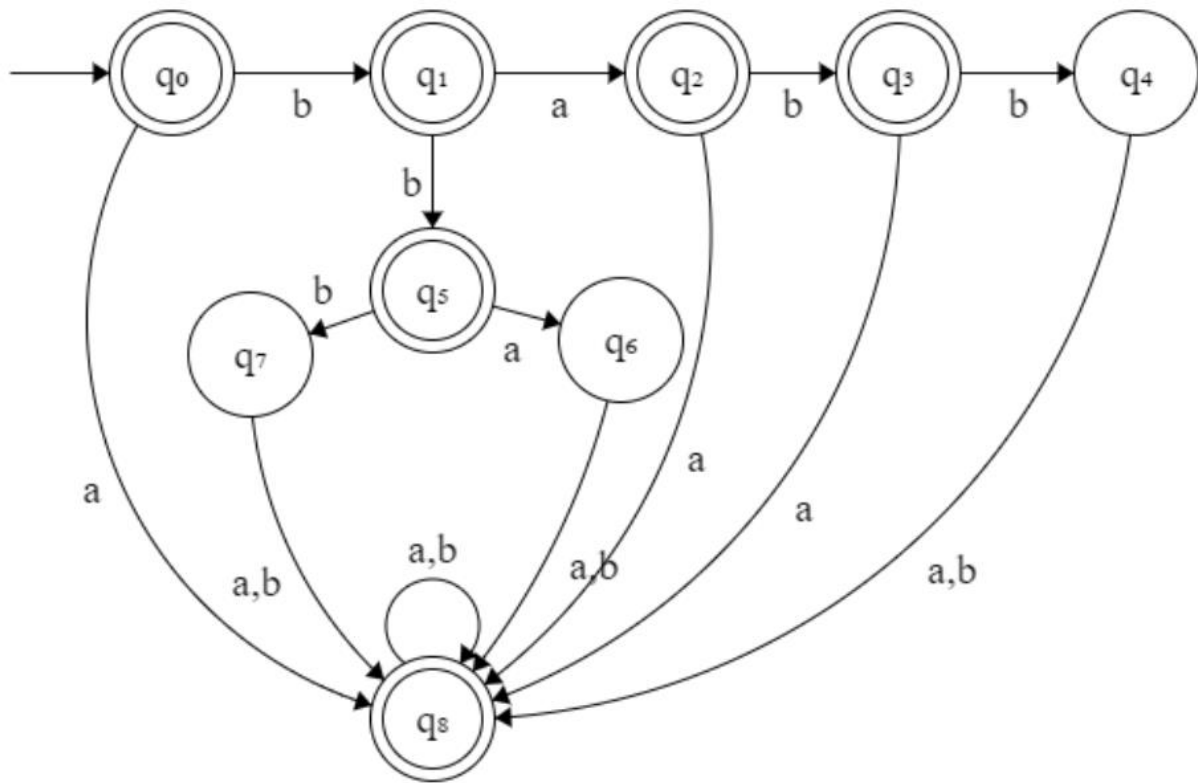
b)



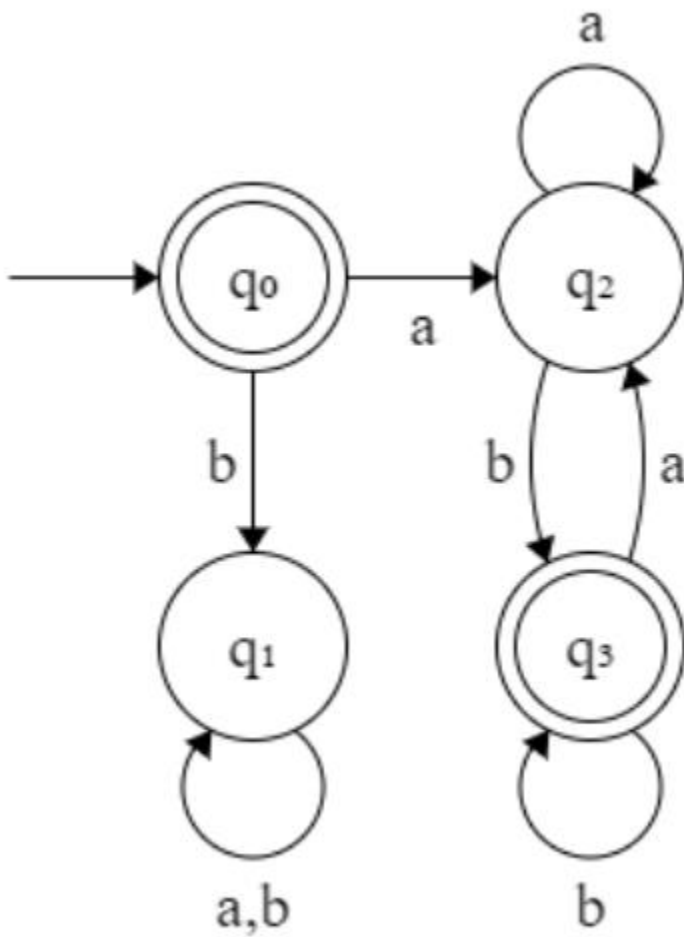
c)



d)

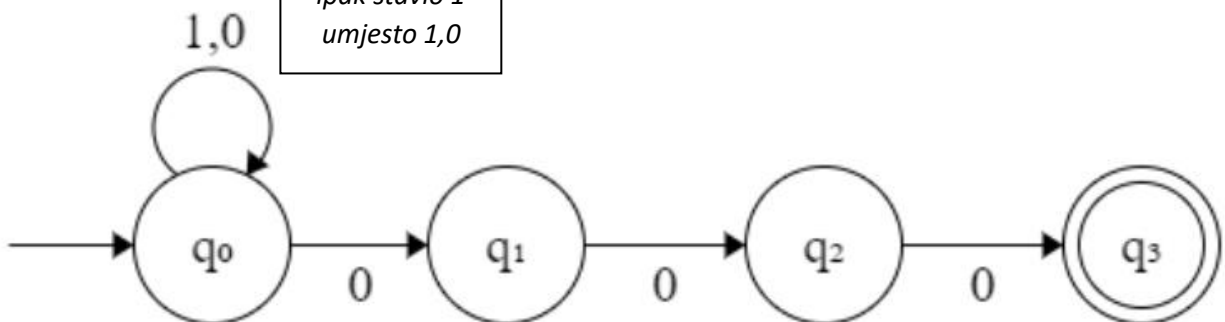


e) (ne smije početi sa b i ne smije završiti sa a)



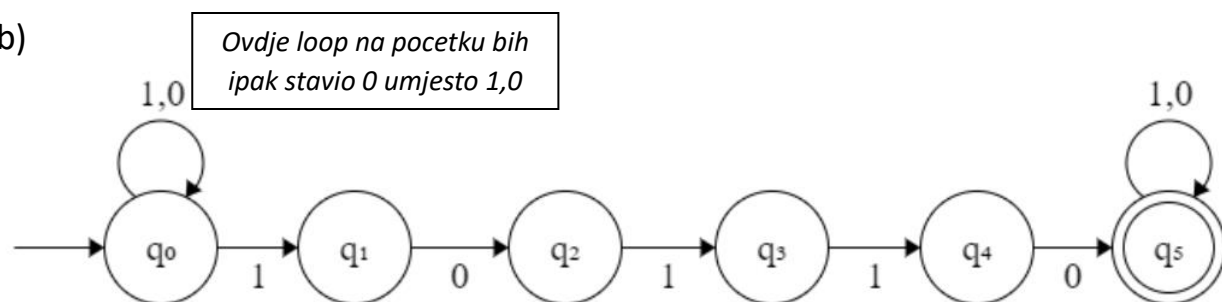
Zadatak 3.

a)



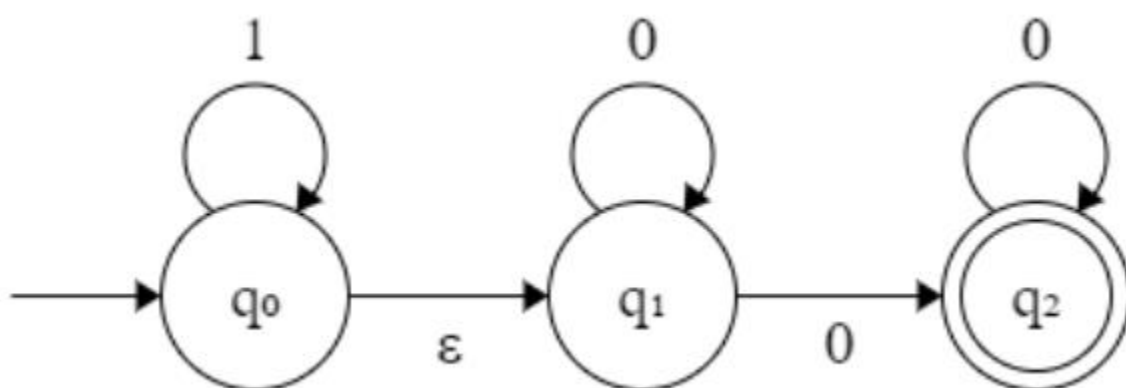
Ovdje loop na
pocetku bih
ipak stavio 1
umjesto 1,0

b)

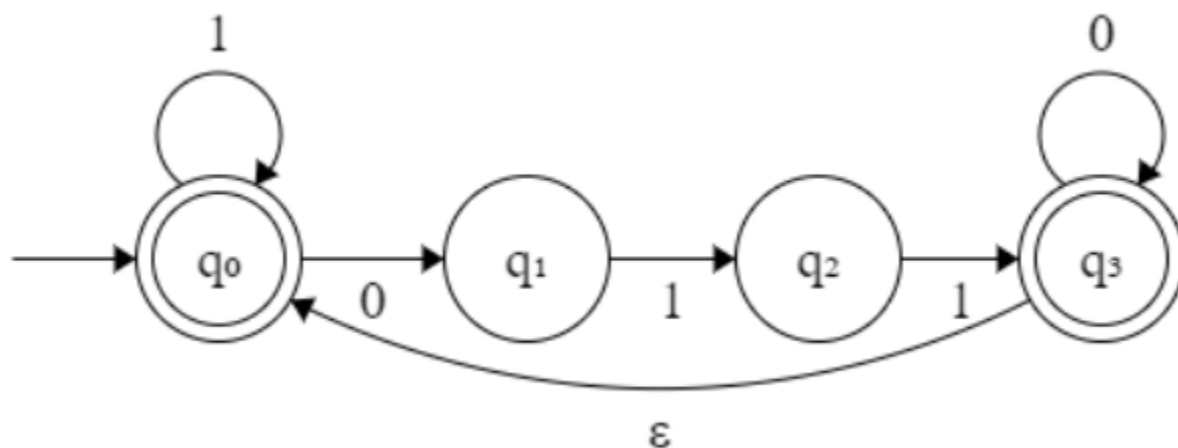


Zadatak 4.

a)

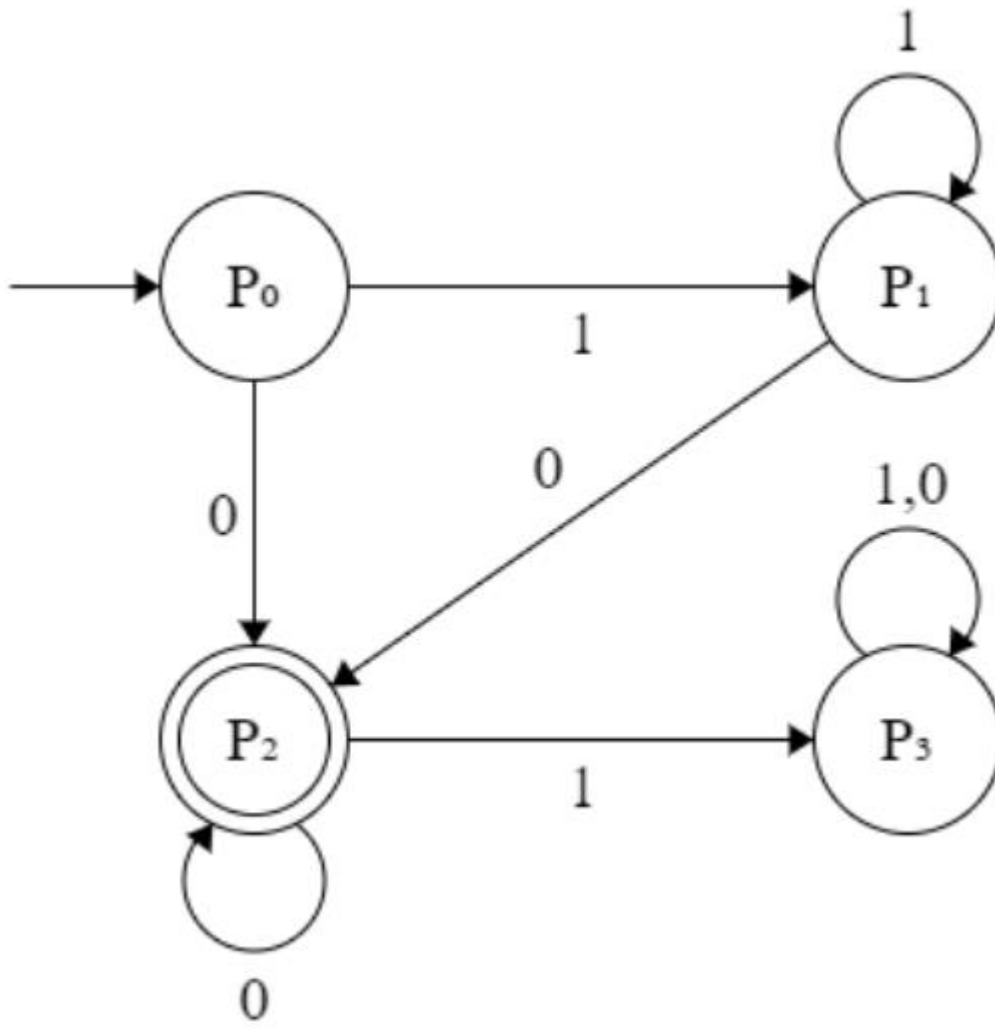


b)



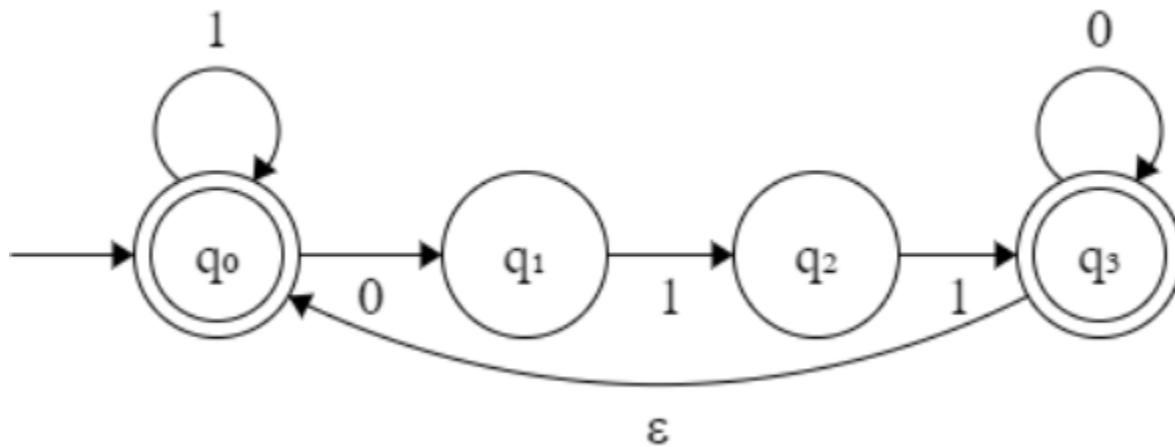
Zadatak 5.

a)



b)

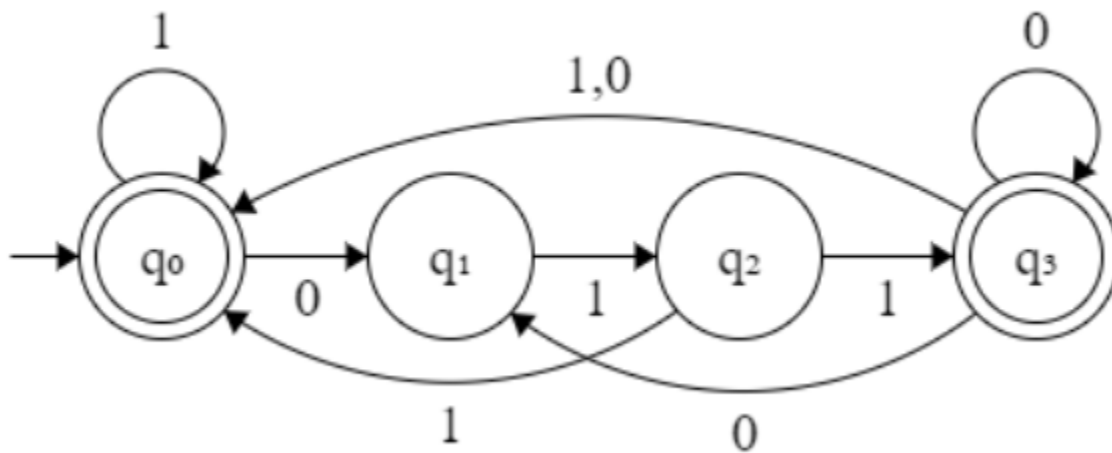
(samo ovaj cu razraditi korak po korak ovdje, druge sam po papirima)



ovo je 4. pod b)

sada pišem tabelu za prelaze za simbole 1 i 0 i tako od e-NKA pravim NKA

P	1	0
q0	q0	q1
q1	q2	n/a
q2	q3,q0	n/a
q3	q0	q3,q0,q1

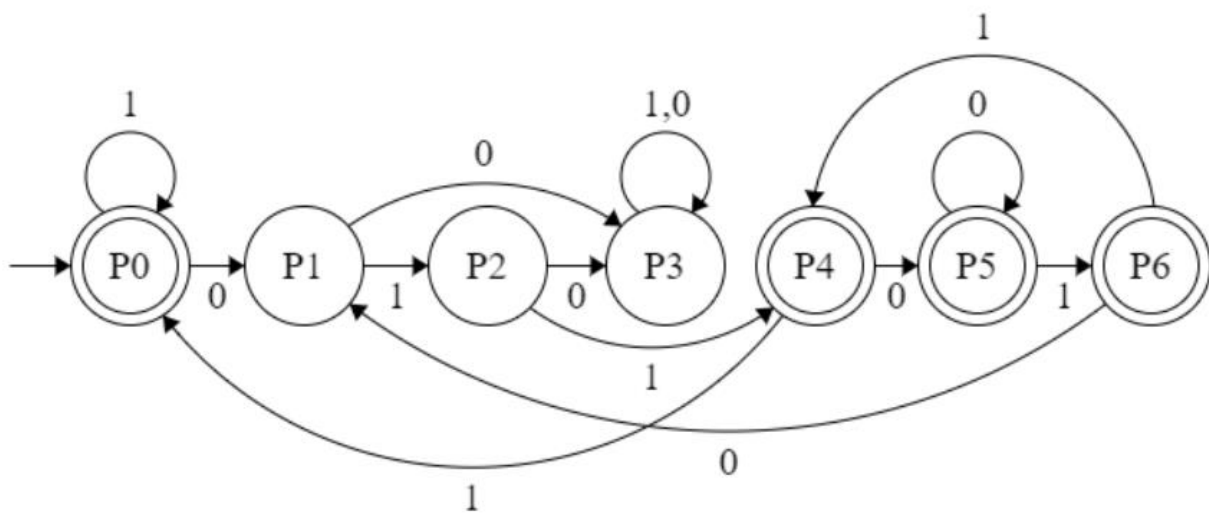


Sada smo dobili NKA, prihvatljivo stanje je isto kao kod e-NKA, uključujući početni q0 jer naš automat prihvata i praznu riječ

sada pišem tabelu za prelaze za simbole 1 i 0 tako da od NKA napravim DKA

P	1	0
P0 = q0	q0 (P0)	q1 (P1)
P1 = q1	q2 (P2)	n/a (P3)
P2 = q2	q0,q3 (P4)	n/a (P3)
P3 = n/a	n/a (P3)	n/a (P3)
P4 = q0,q3	q0 (P0)	q0,q1,q3 (P5)
P5 = q0,q1,q3	q0,q2 (P6)	q0,q1,q3 (P5)
P6 = q0,q2	q0,q3 (P4)	q1 (P1)

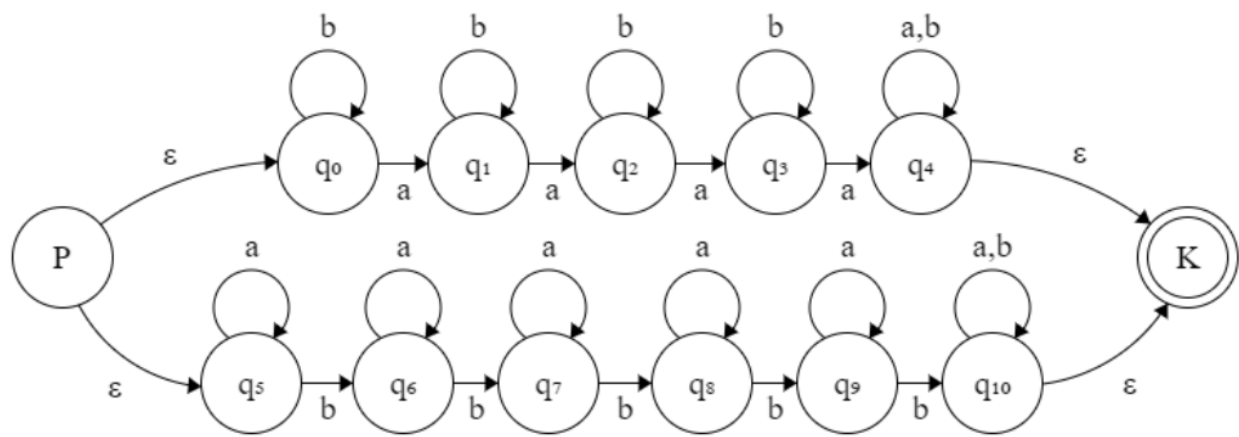
Sada pravimo naš DKA, prihvatljiva stanja su sva stanja koja sadrže q0 ili q3 jer su to prihvatljiva stanja iz NKA.



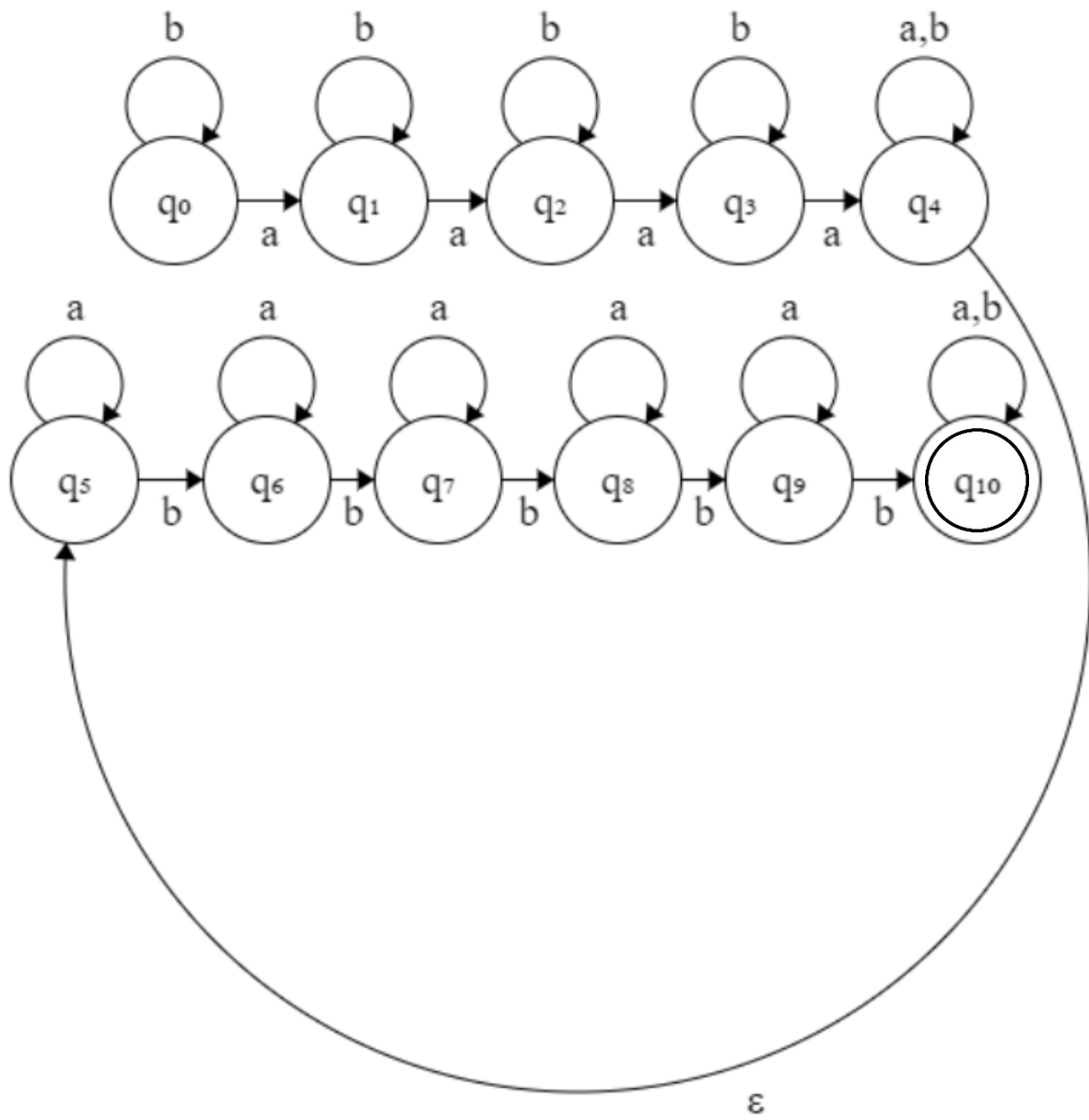
Dobili smo naš DKA.

Zadatak 6.

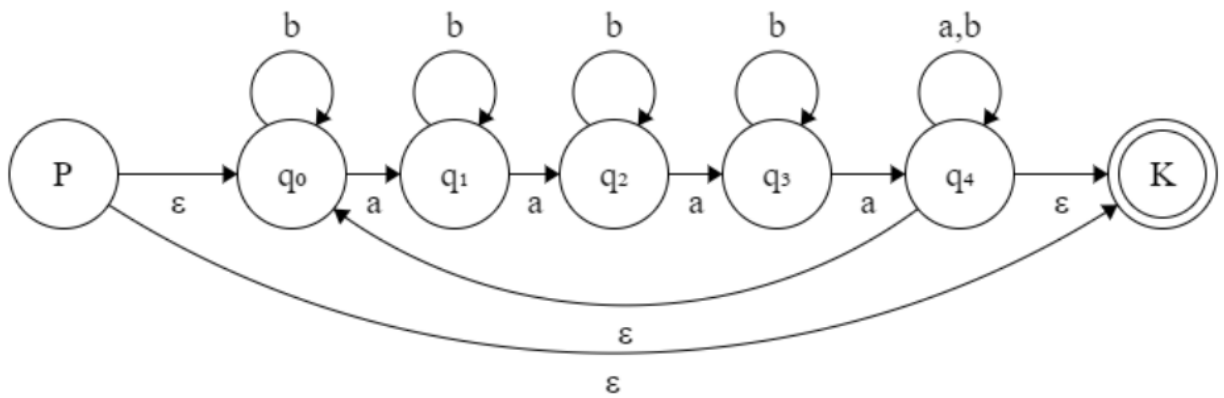
a)



b)

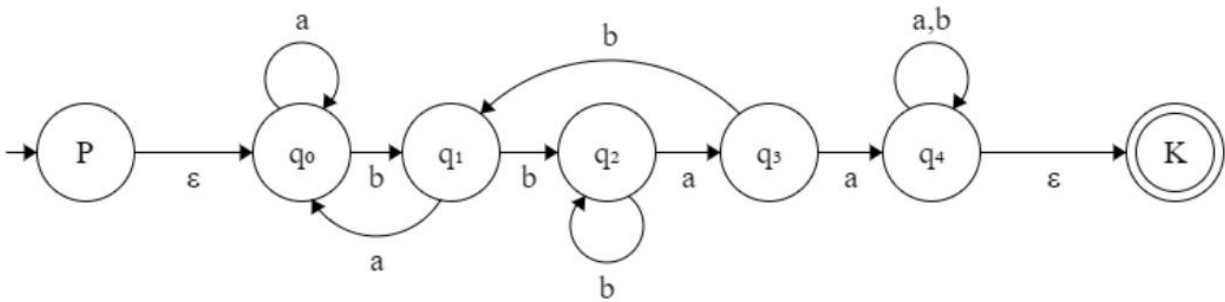


c)

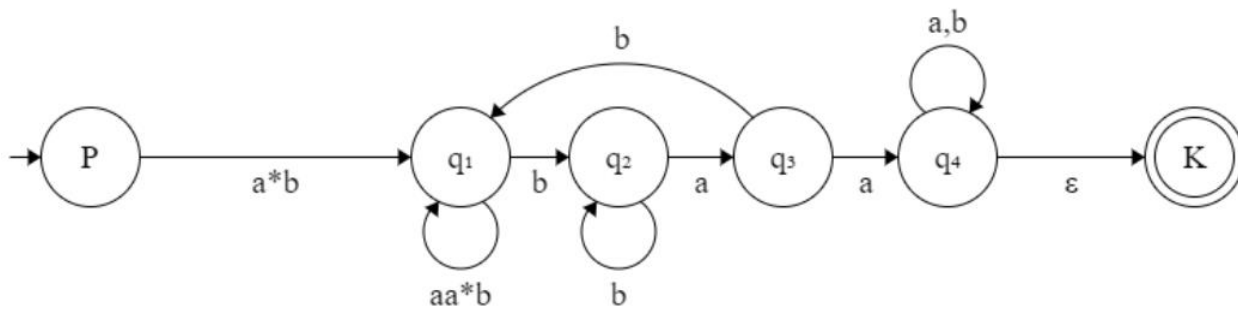


Zadatak 7.

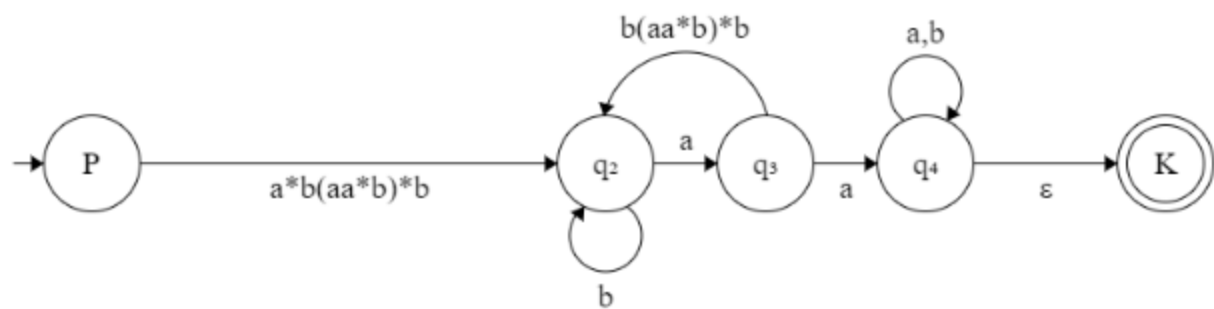
a) izbacujem redom od q_0 do q_4 (ne pratim pravilo najmanjeg broja ulaza)



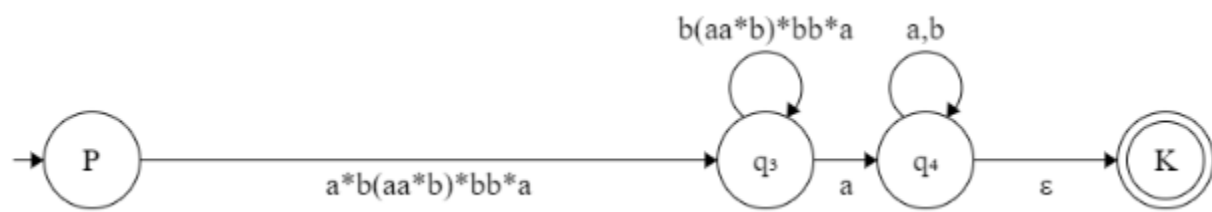
Sada q_0 izbacujem



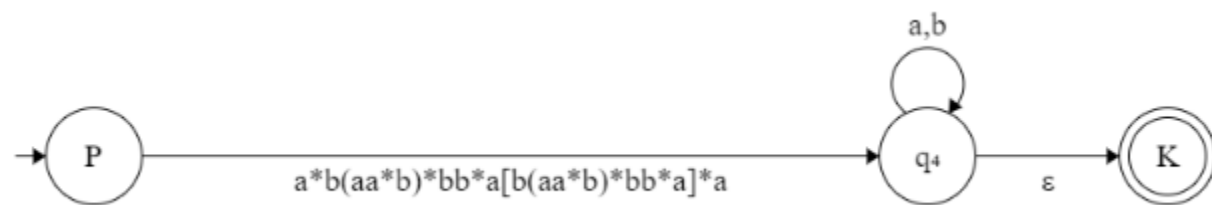
izbacujem q_1



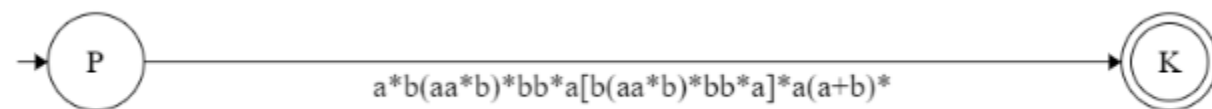
izbacujem q_2



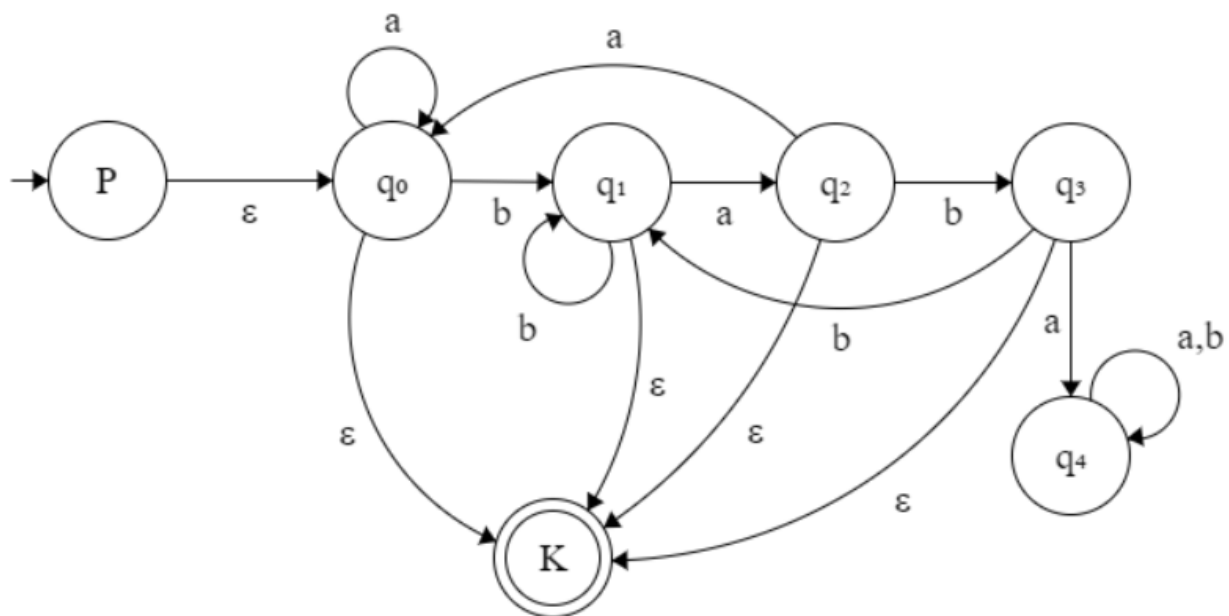
izbacujem q_3



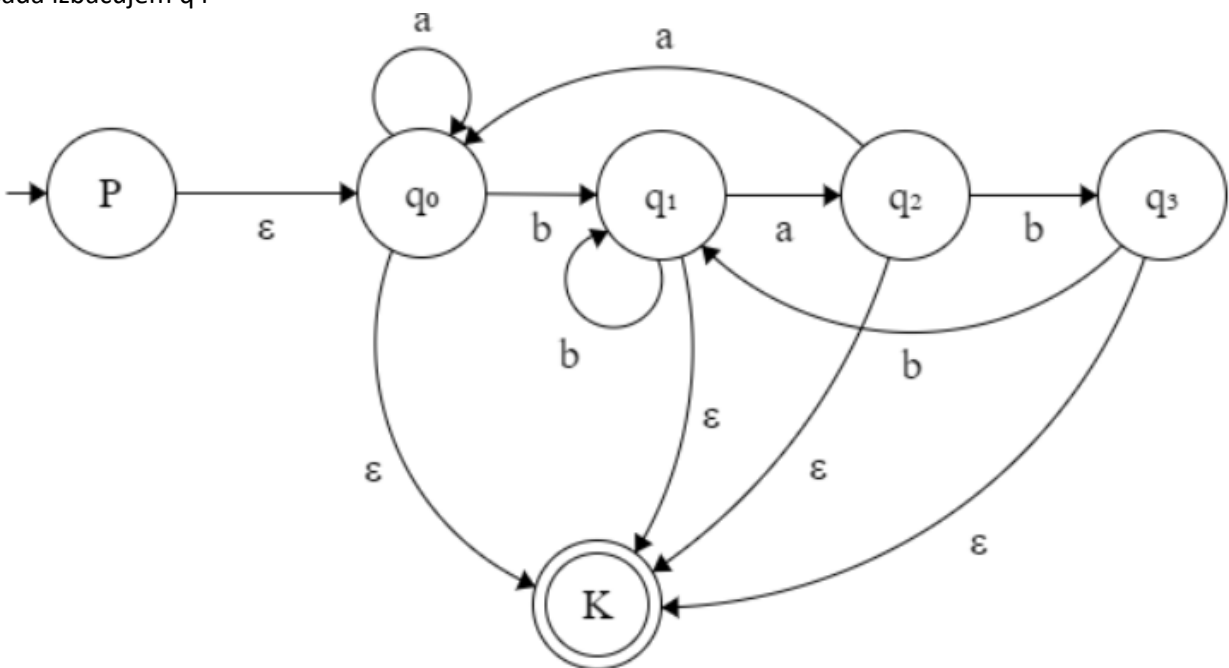
izbacujem q_4



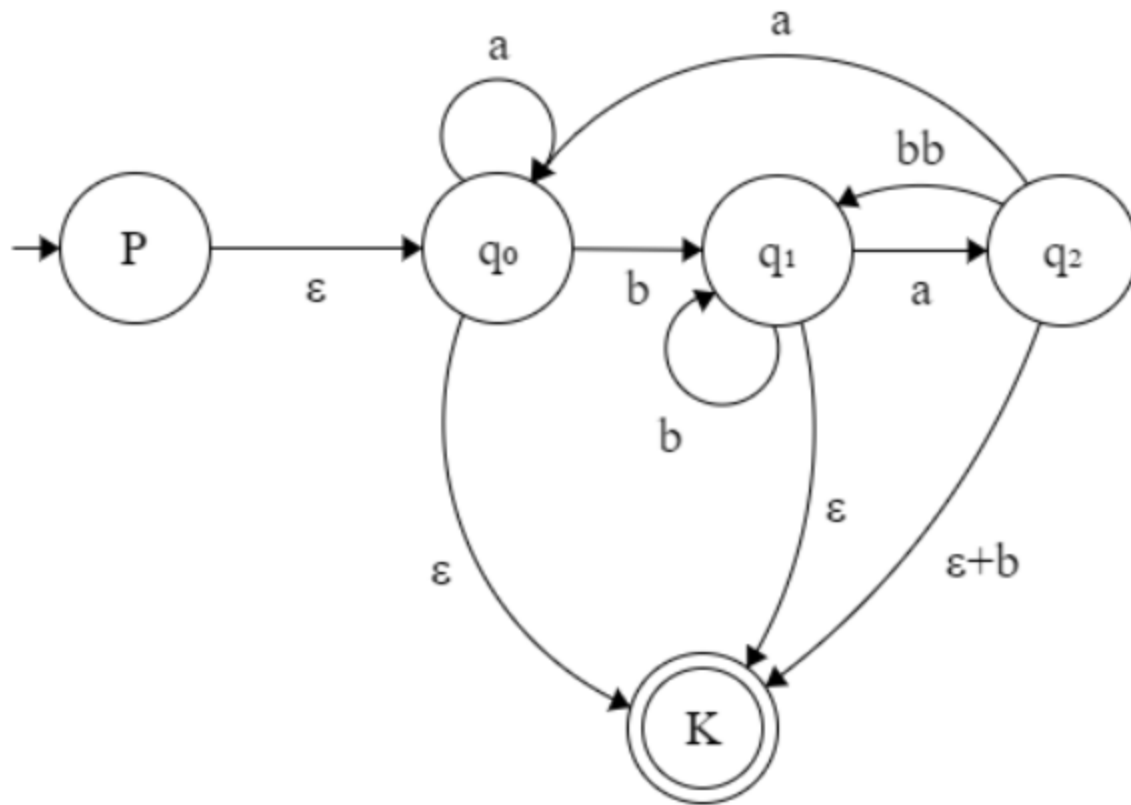
b)



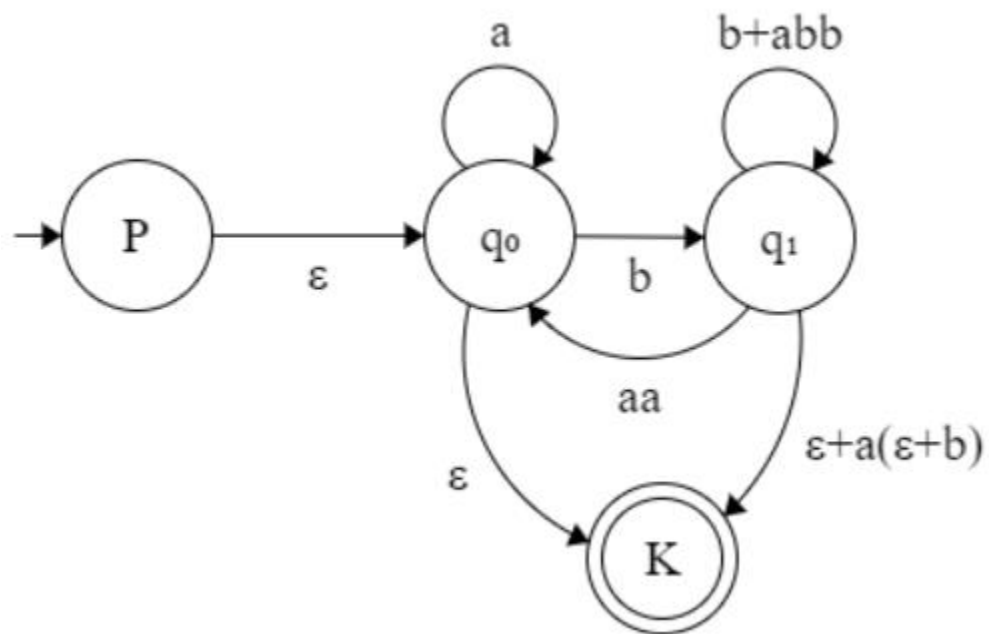
Sada izbacujem q_4



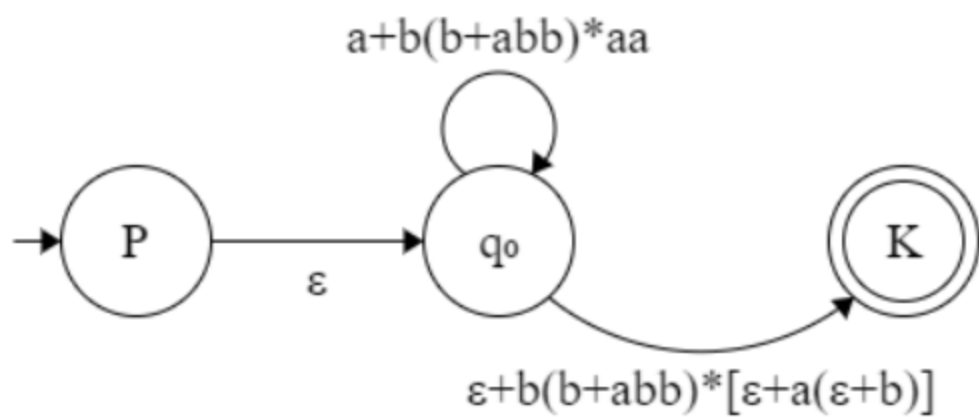
izbacujem q_3



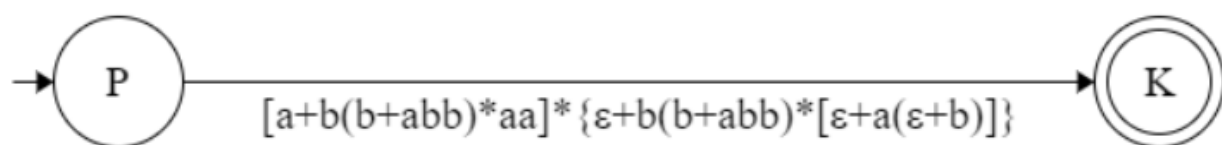
izbacujem q_2



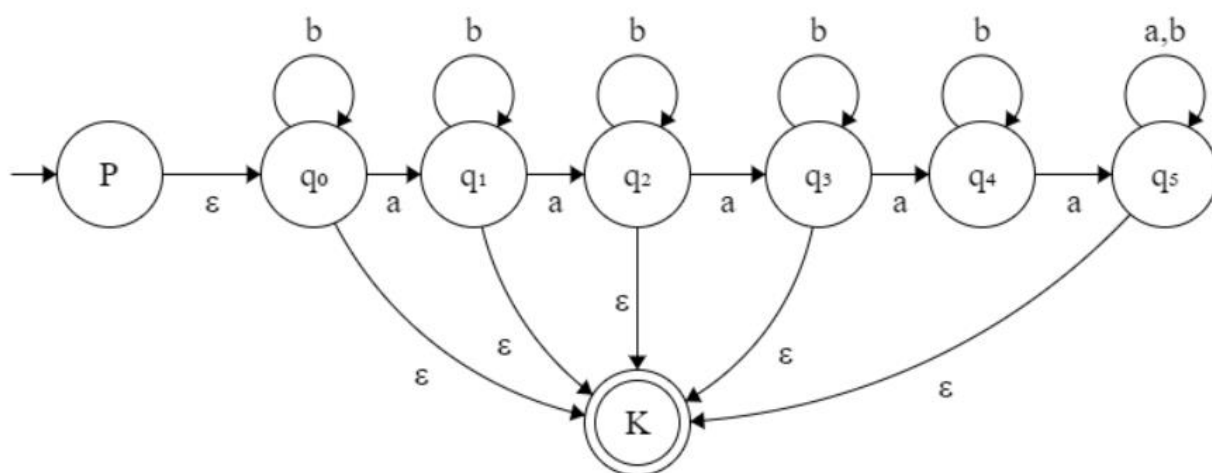
izbacujem q_1



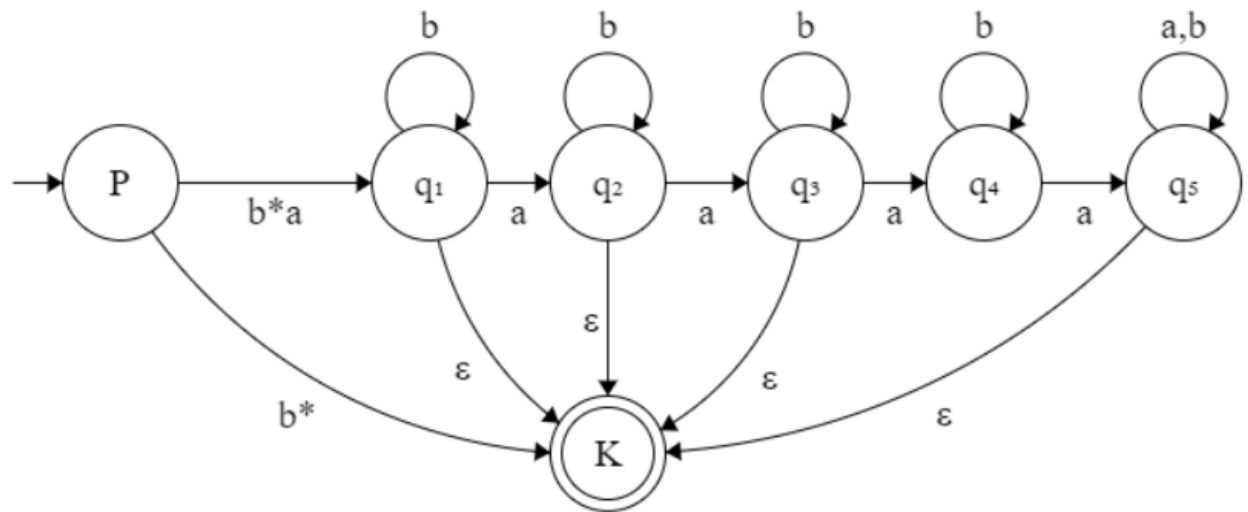
izbacujem q_0



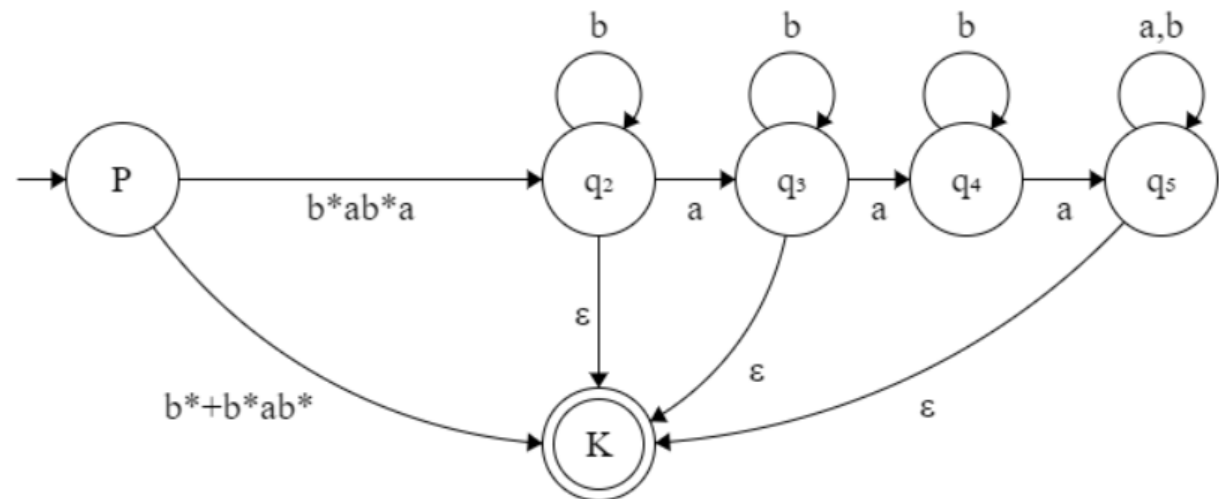
c)



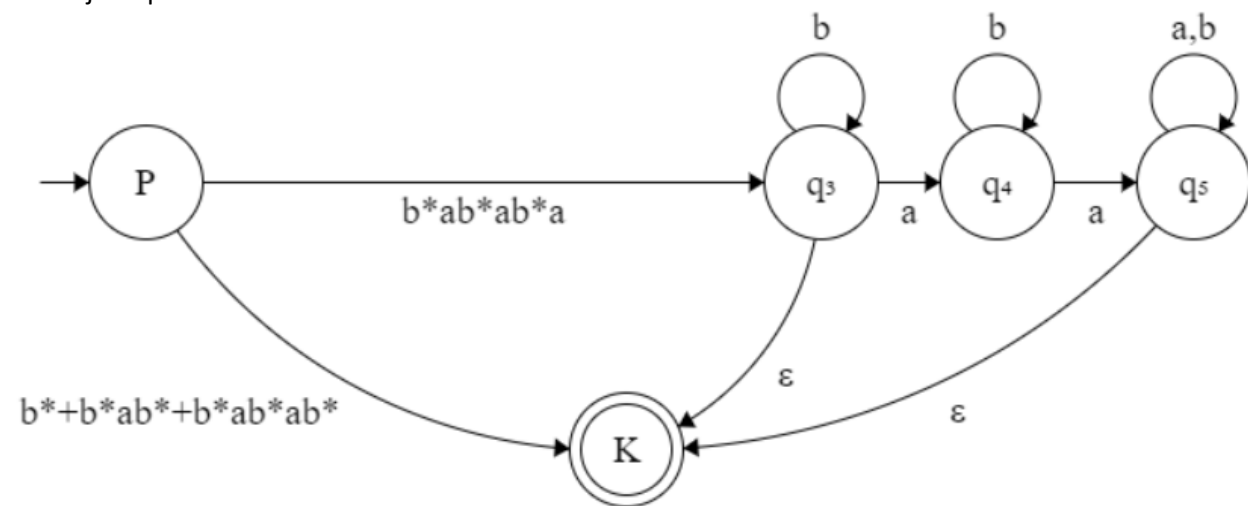
izbacujem q_0



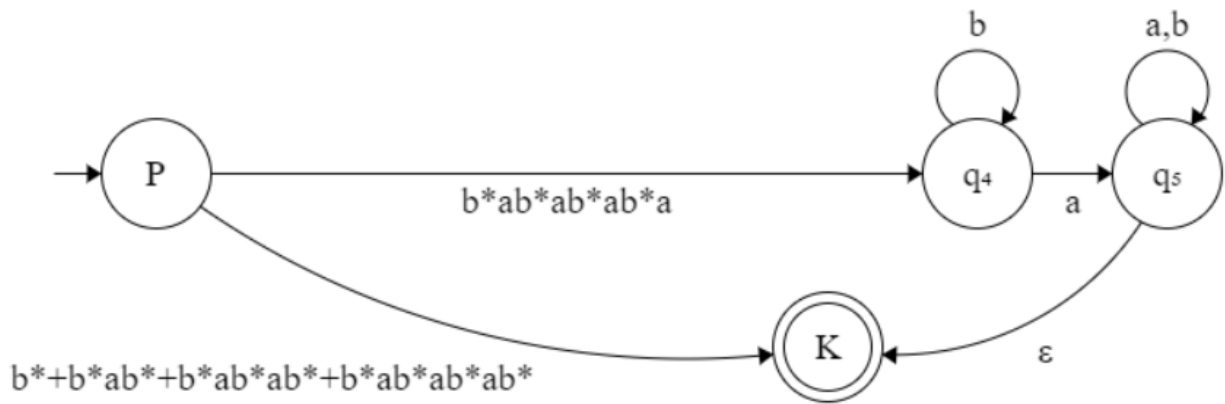
izbacujem q_1



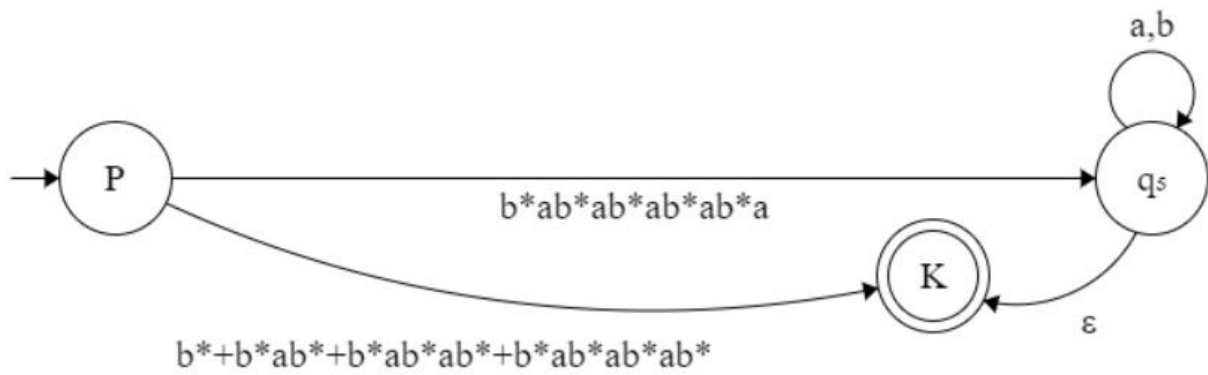
izbacujem q_2



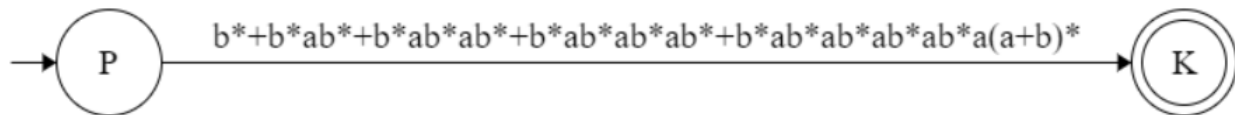
izbacujem q_3



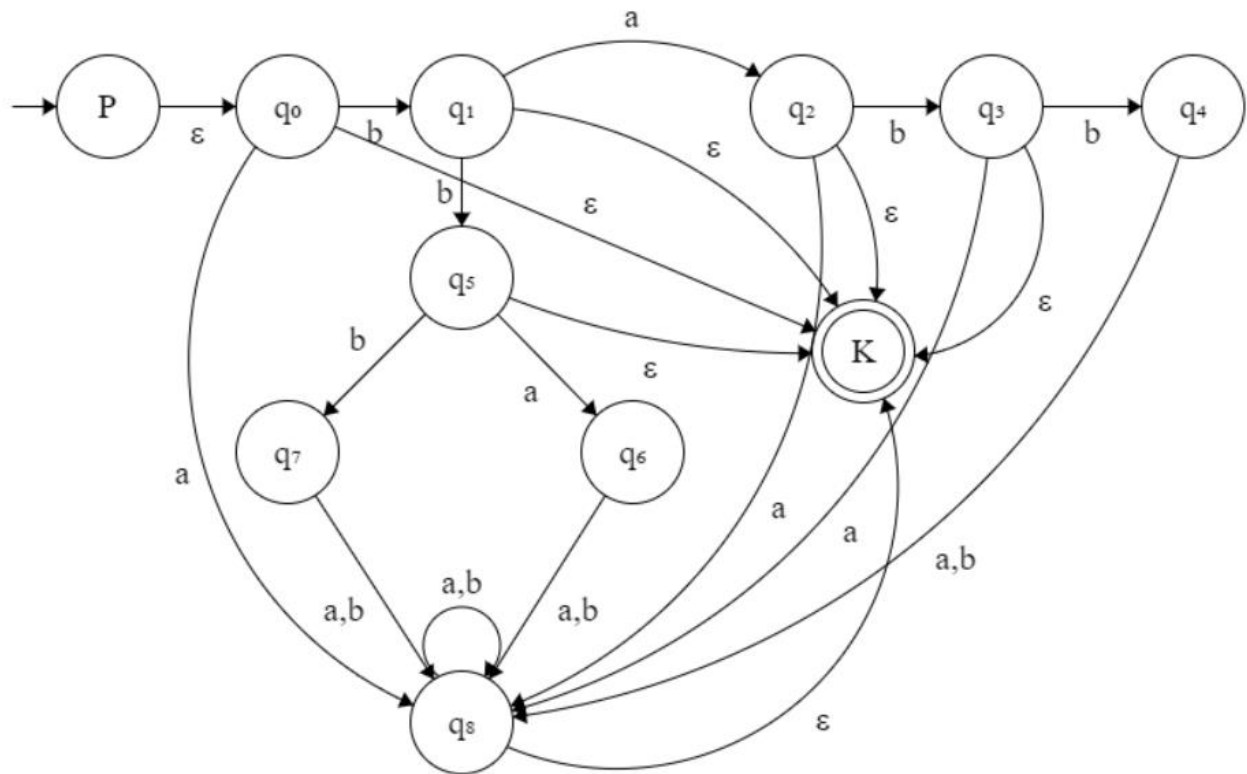
izbacujem q_4



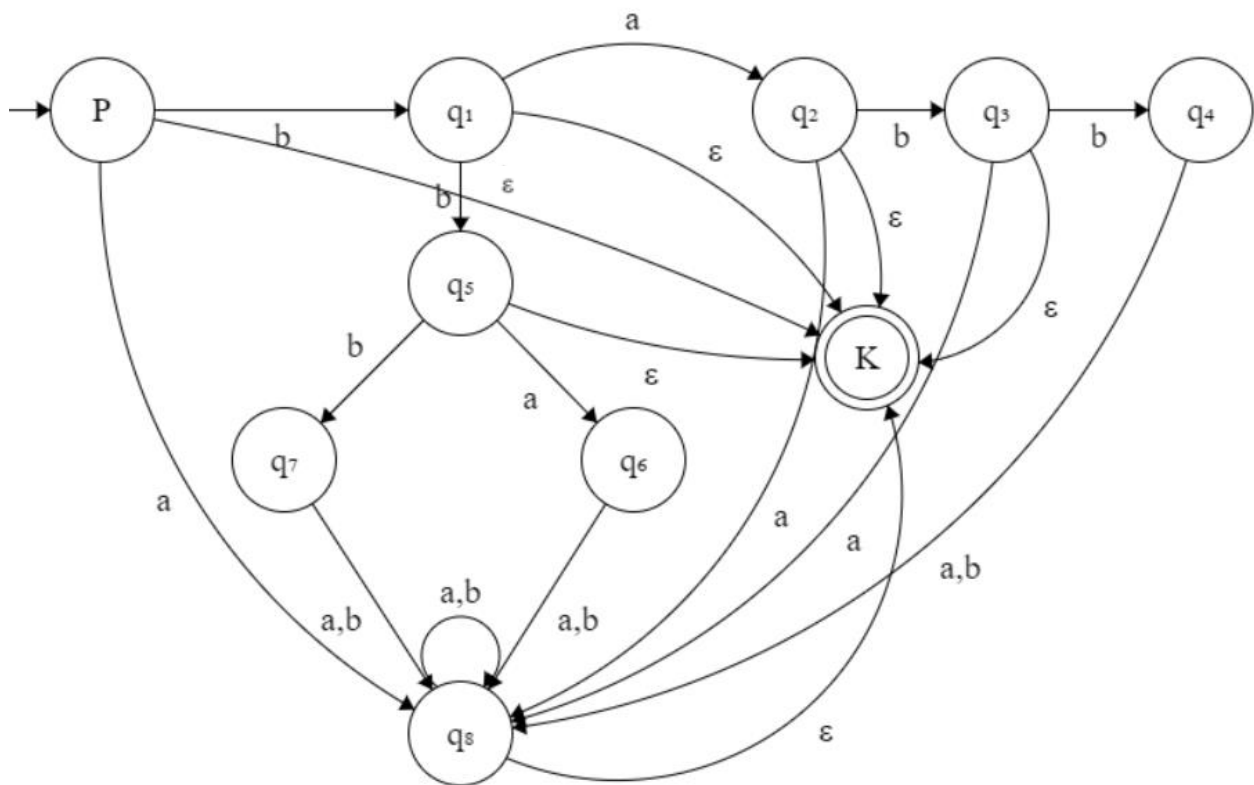
izbacujem q_5



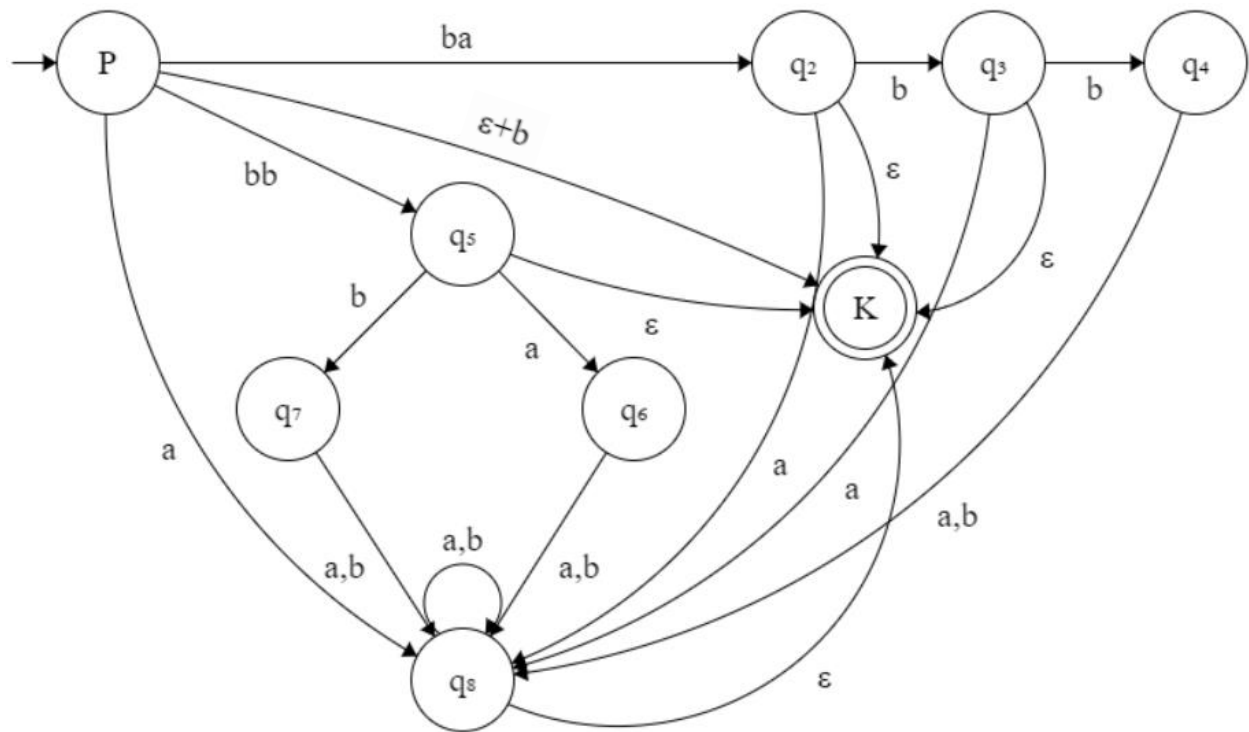
d)



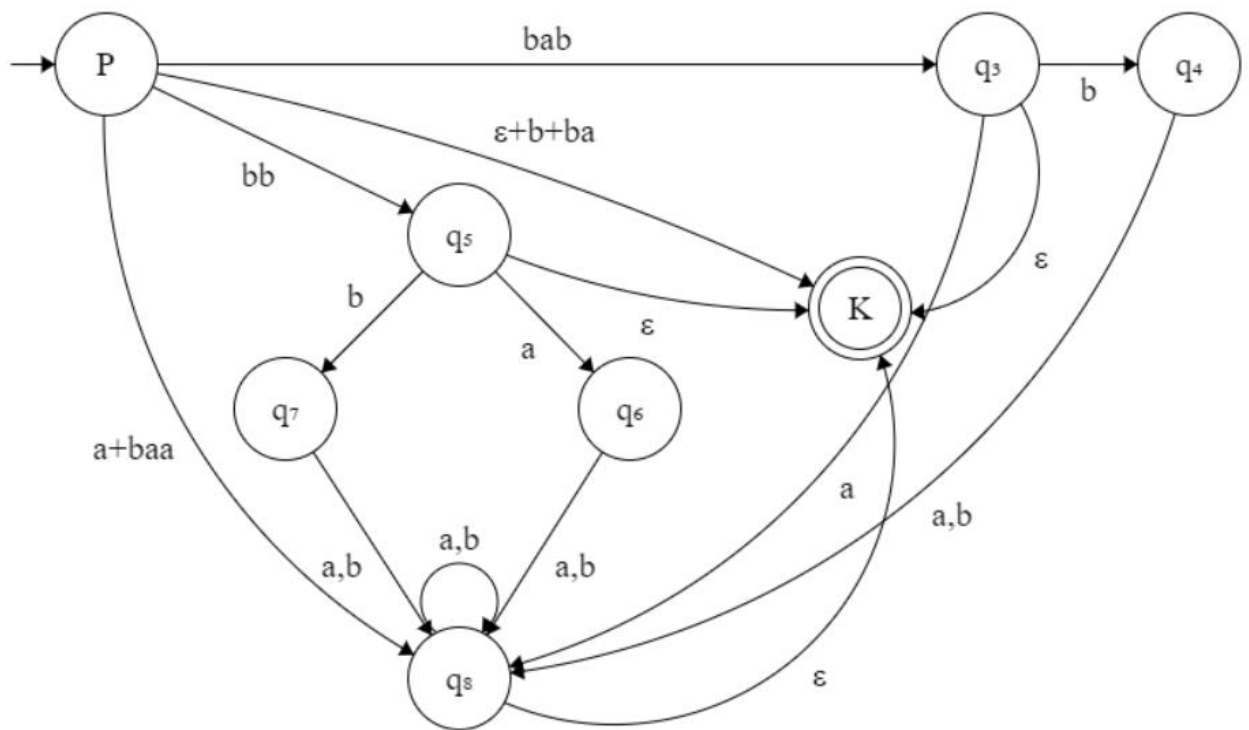
izbacujem q_0



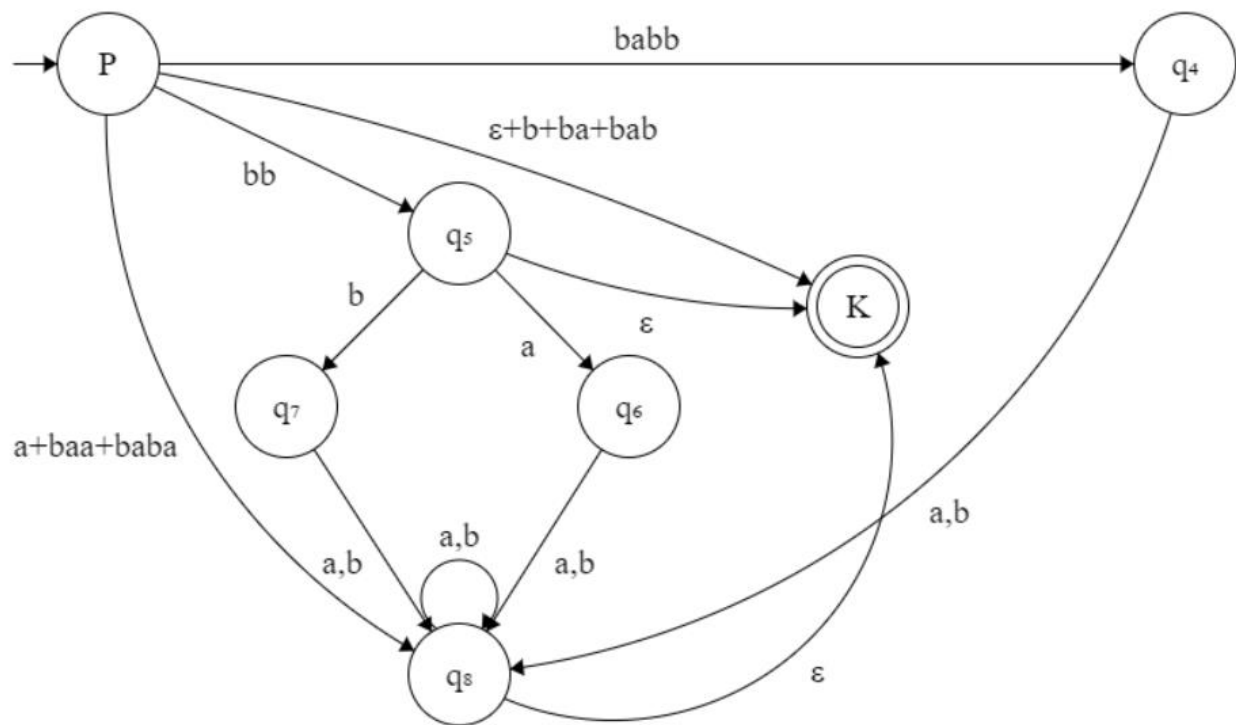
izbacujem q1



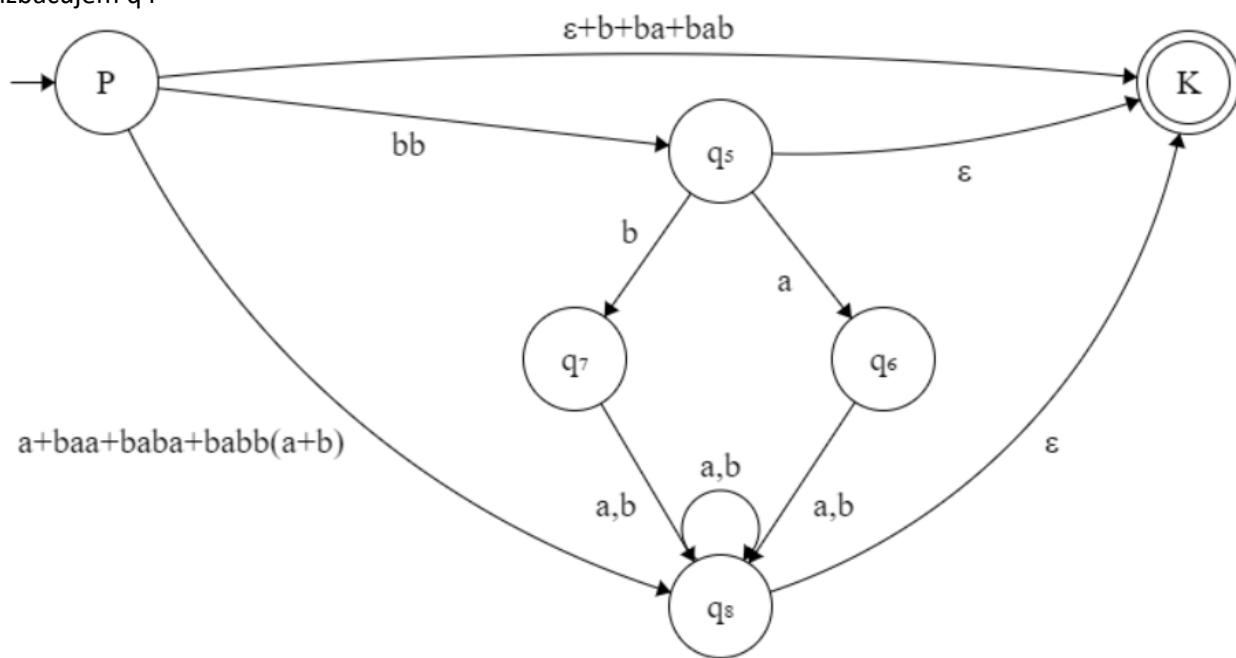
izbacujem q2



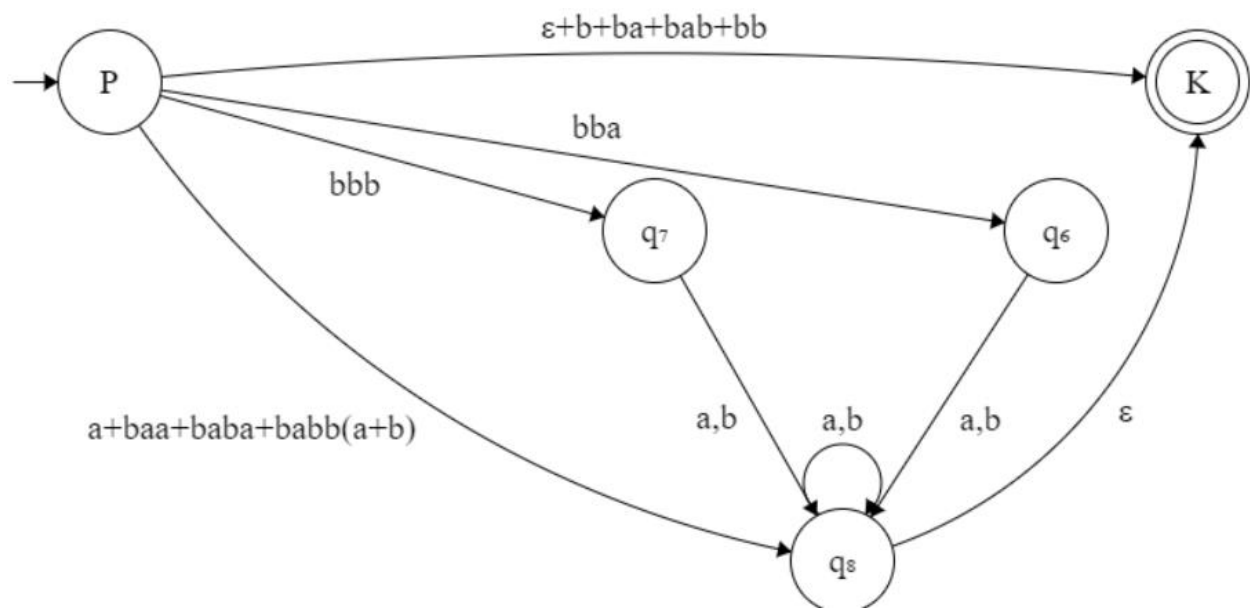
izbacujem q3



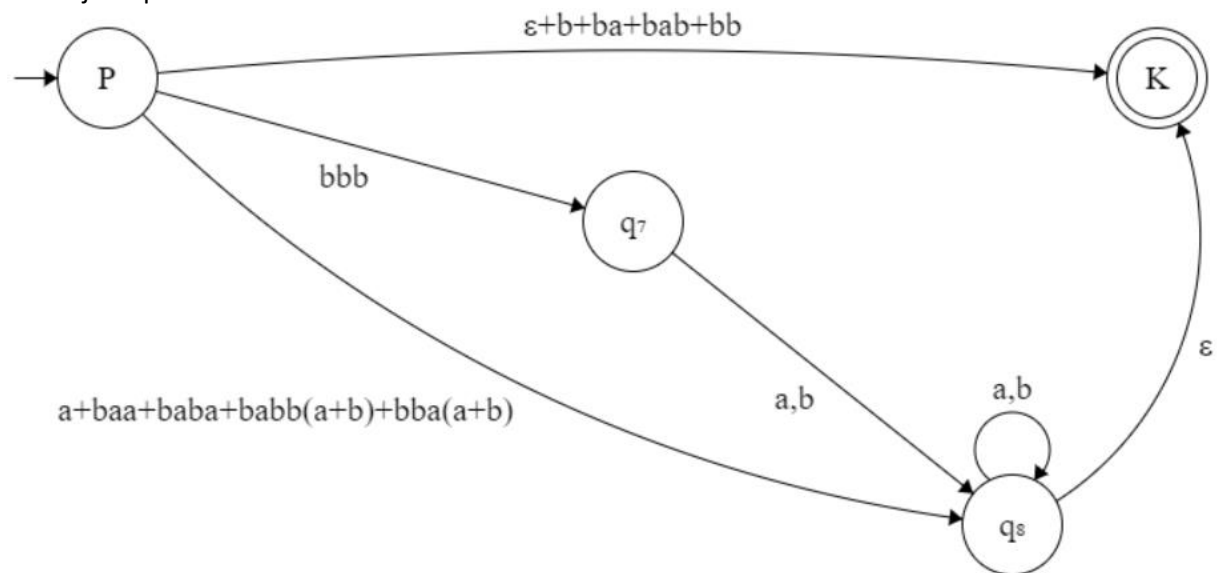
izbacujem q_4



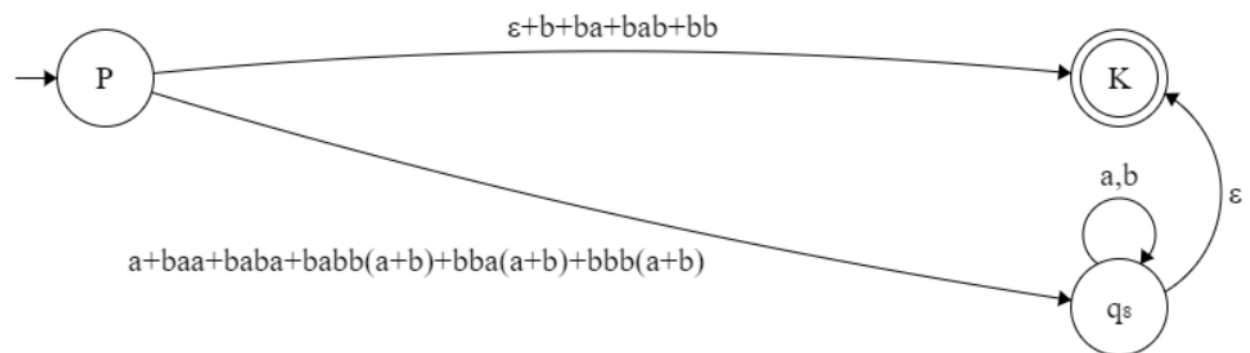
izbacujem q_5



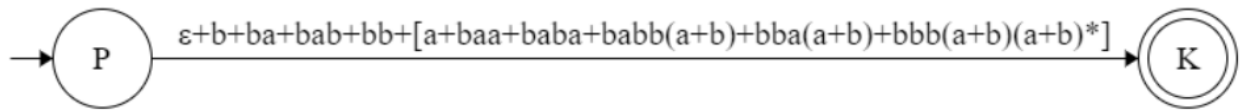
izbacujem q_6



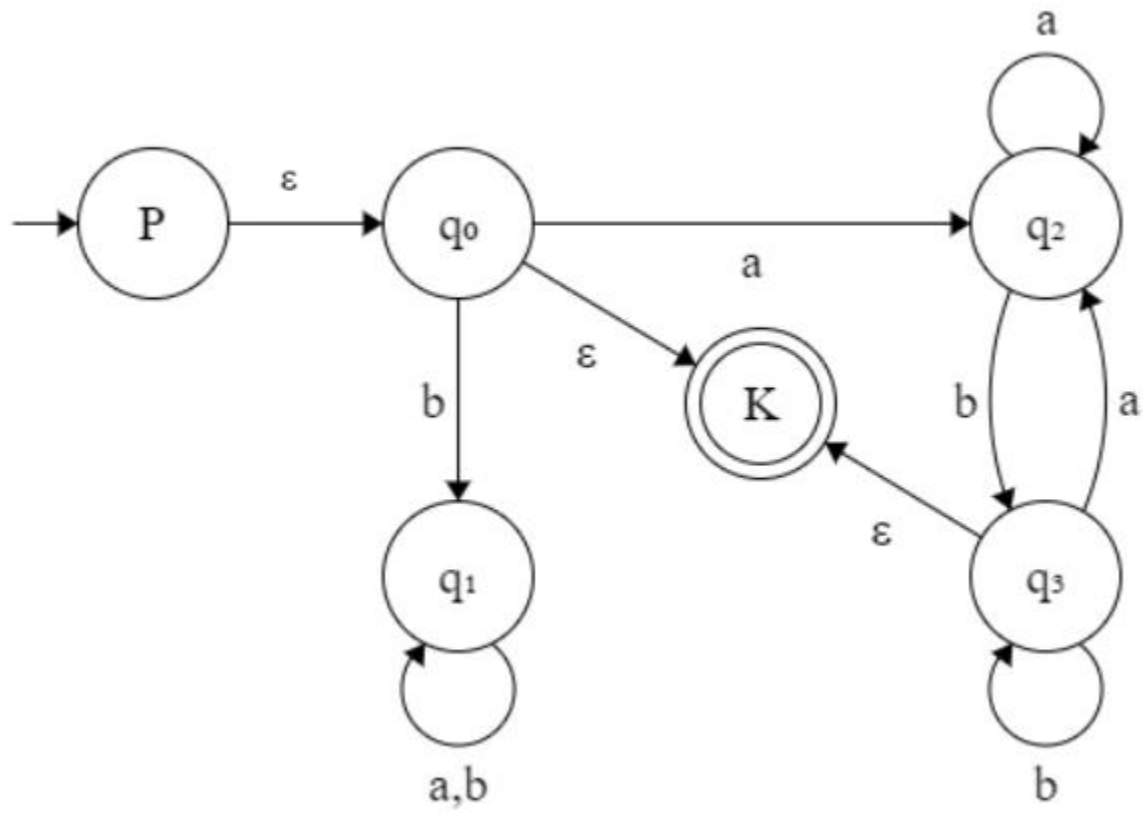
izbacujem q_7



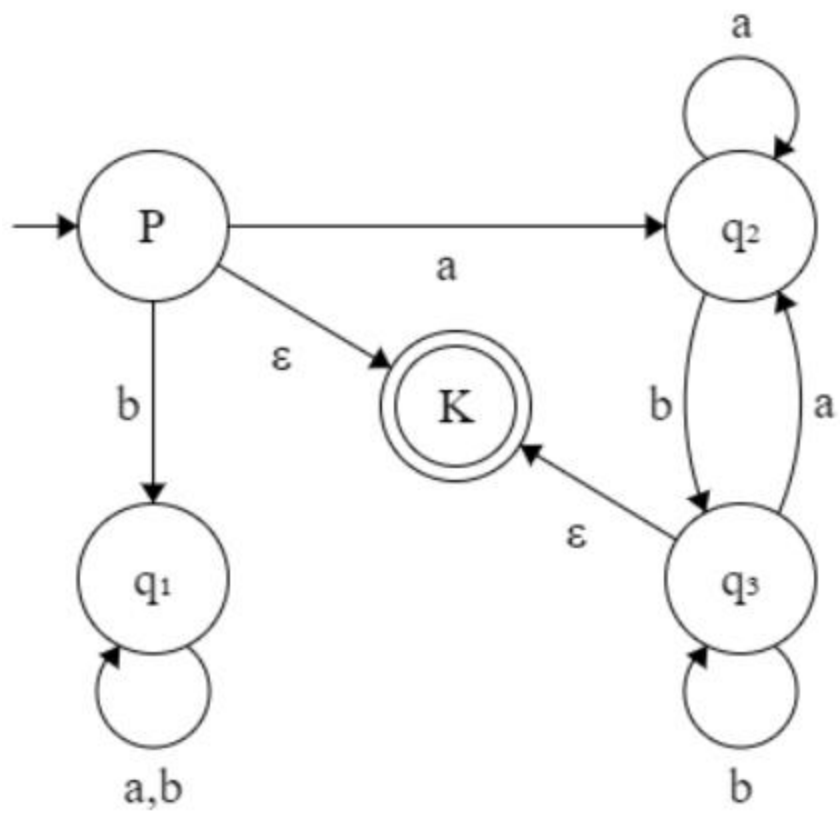
izbacujem q_8



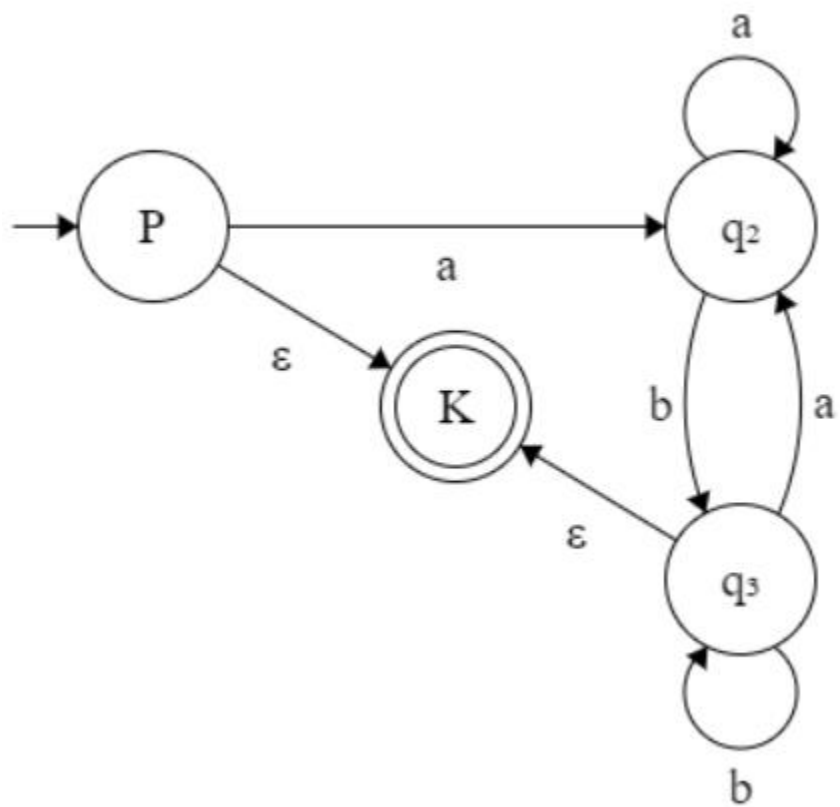
e)



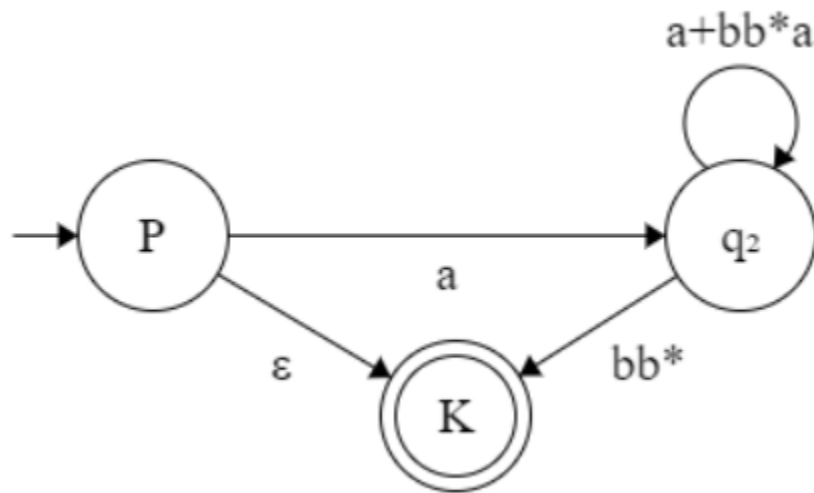
izbacujem q_0



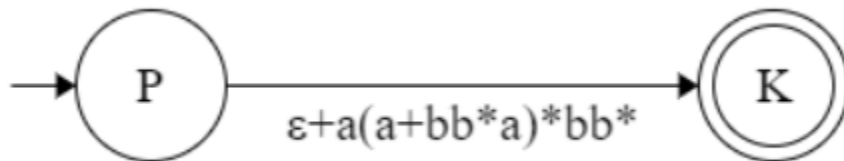
izbacujem q1



izbacujem q3 (ima 2 ulaza dok q2 ima 3 ulaza)

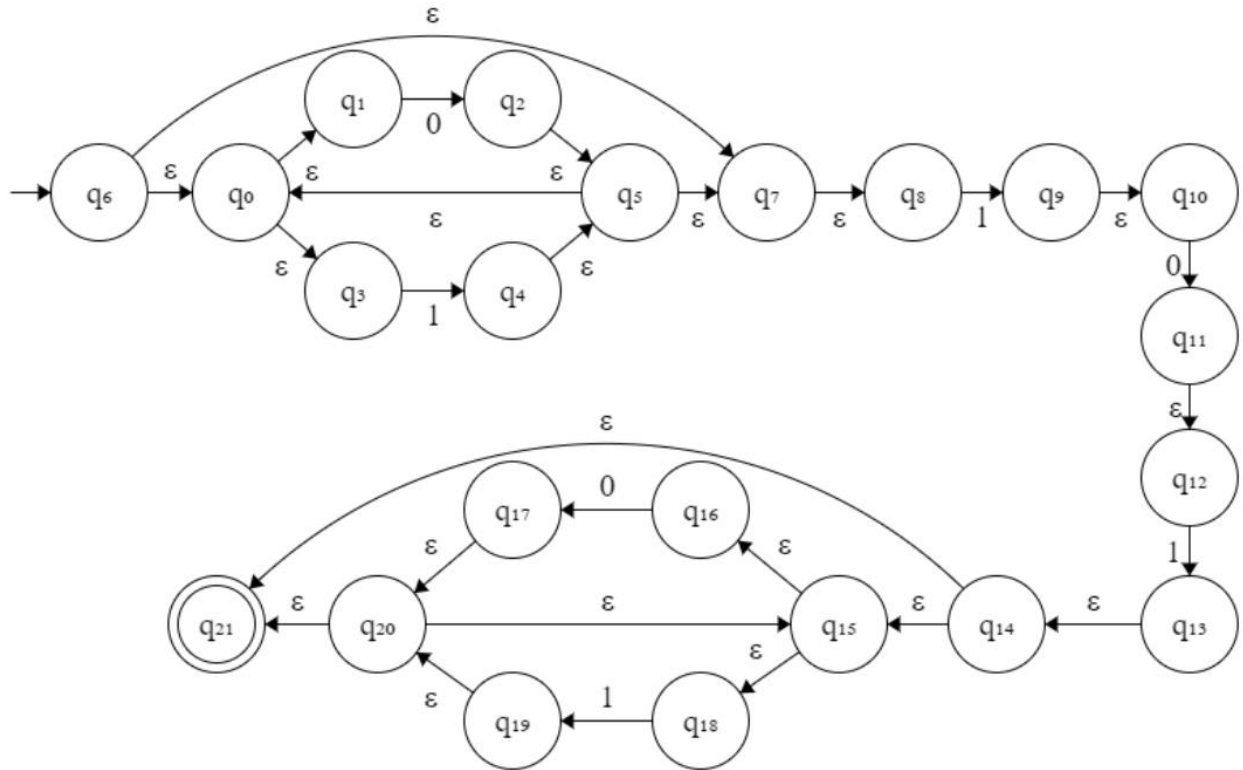


izbacujem q_2



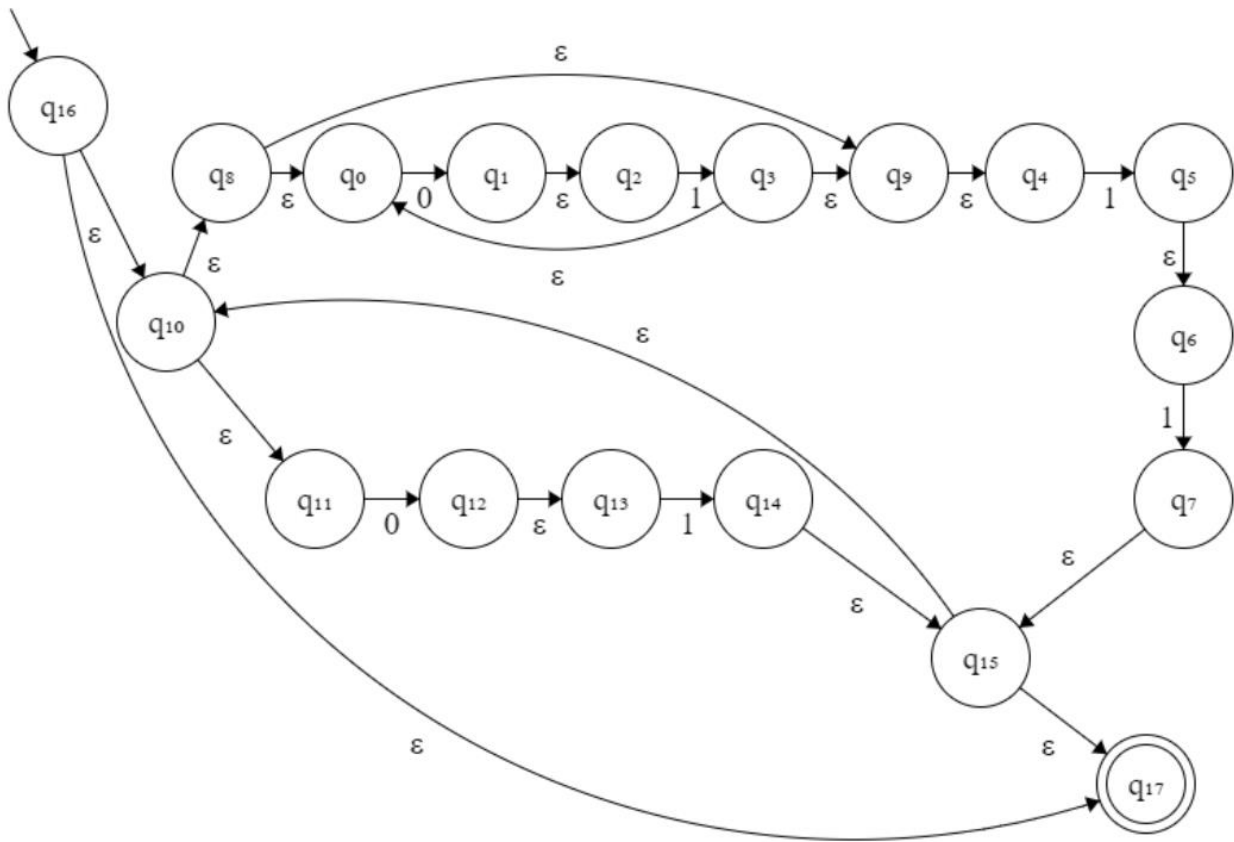
Zadatak 8.

a) $r = (0+1)^*101(0+1)^*$



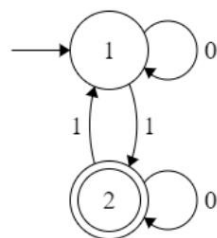
Zadatak 9.

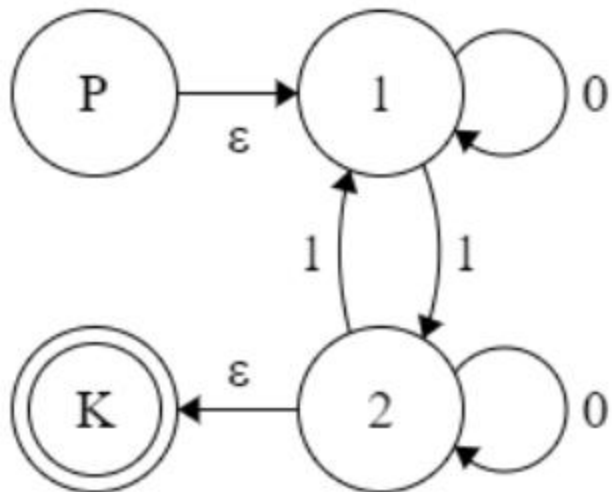
a) $r = \{[(01)^*(11)] + 01\}^*$



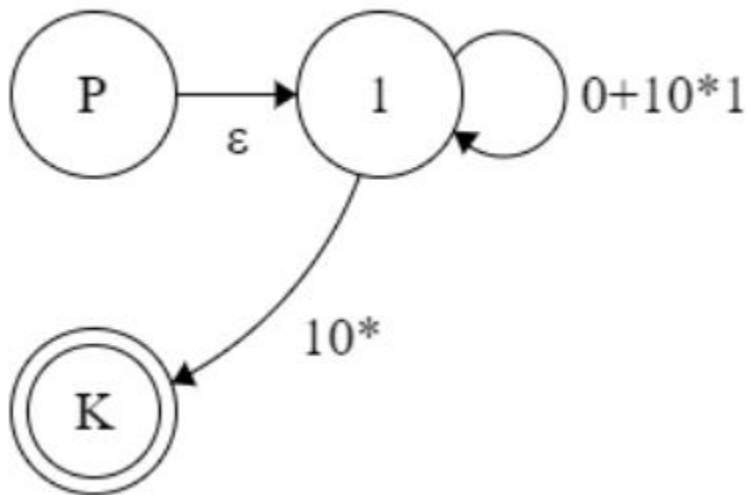
Zadatak 10.

a) GNFA za sljedeći DKA:

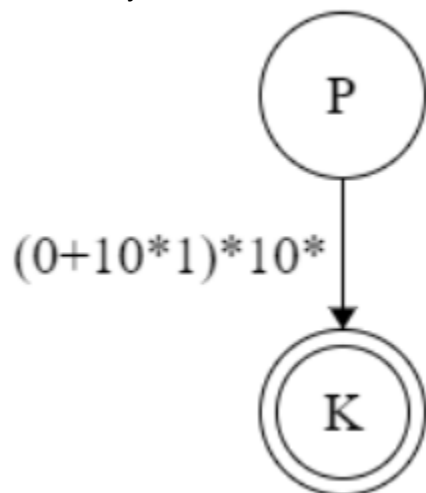




sada uklanjam 2 (ima dva ulaza dok 1 ima tri ulaza)



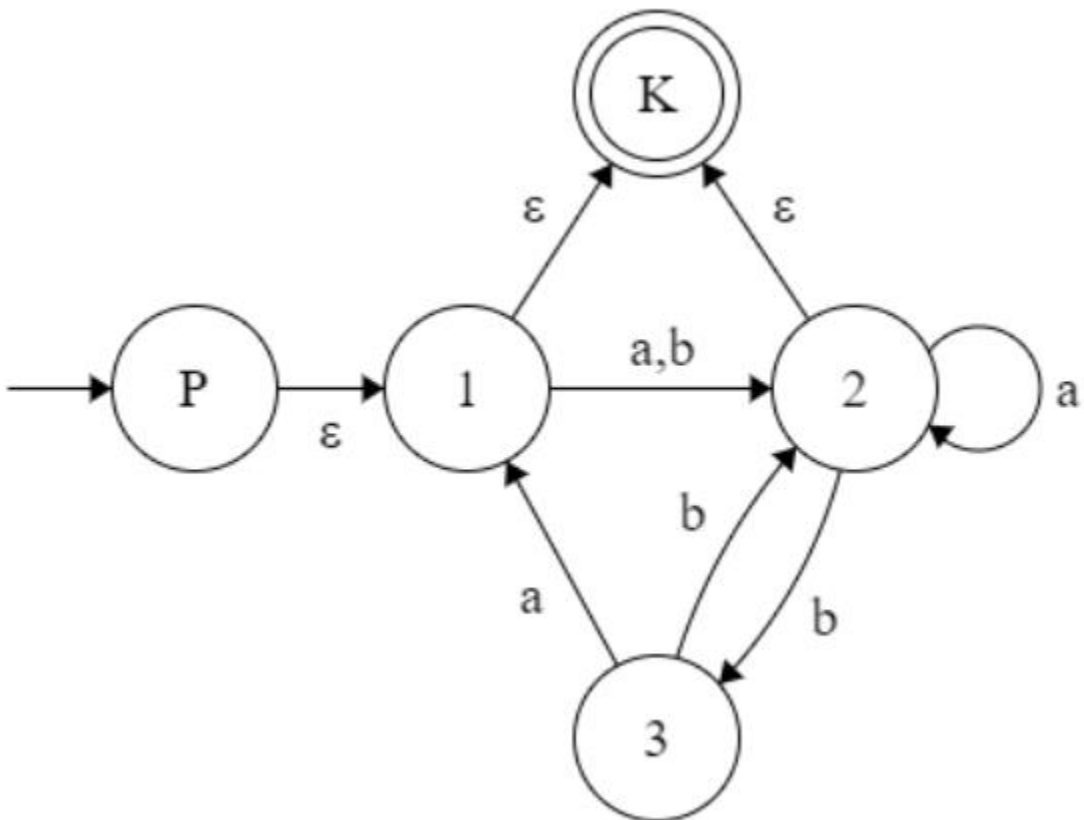
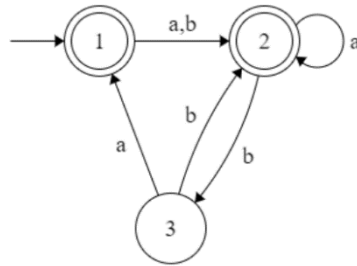
sada uklanjam 1



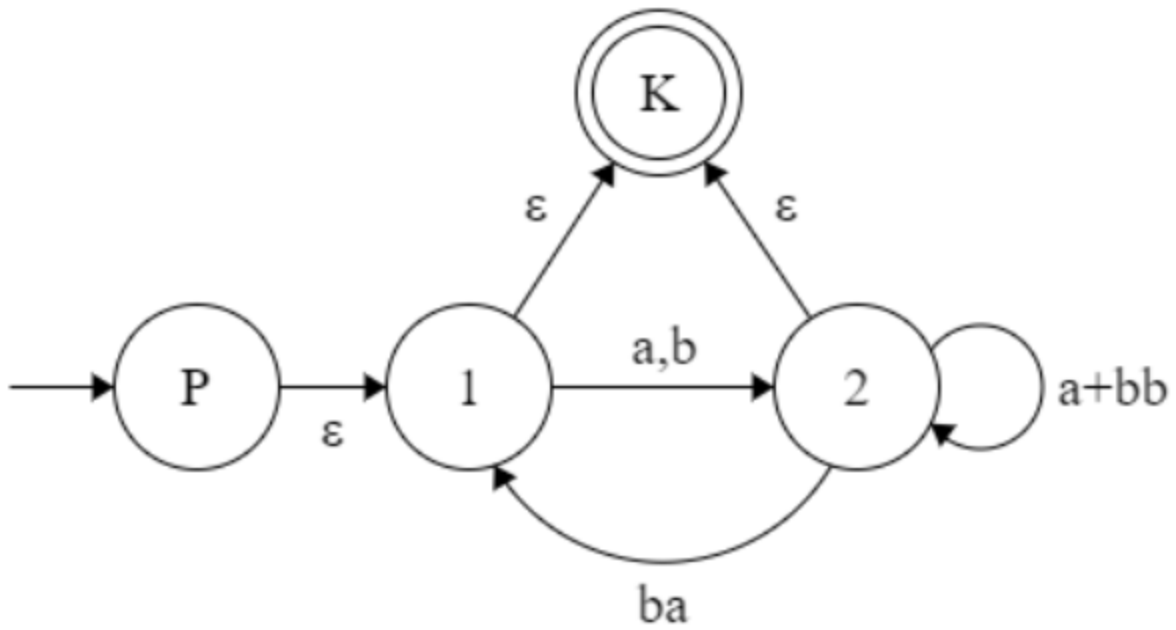
DAKLE $r = (0+10^*1)^*10^*$

Zadatak 11.

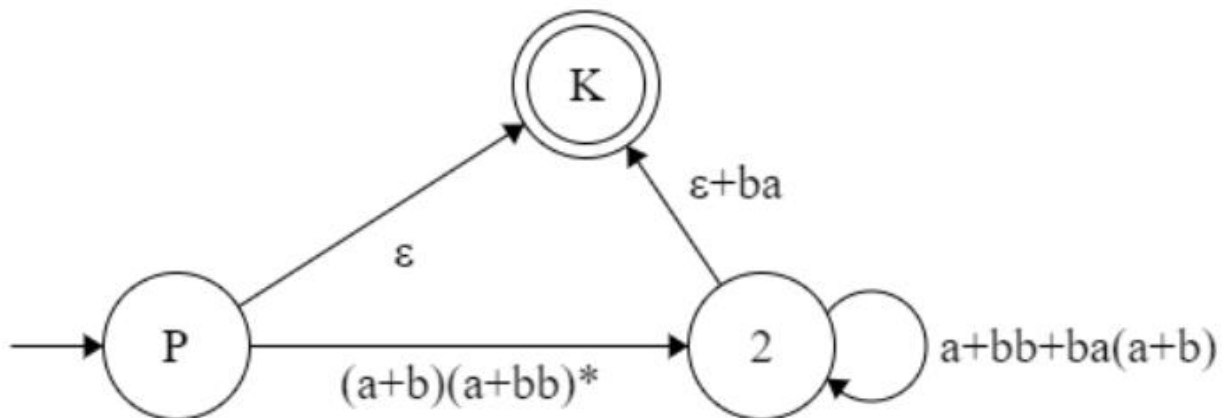
a) GNFA za sljedeći DKA:



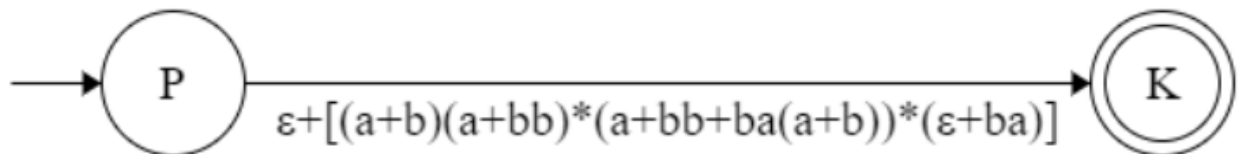
sada uklanjam 3 (ima samo jedan ulaz)



sada uklanjam 1



sada uklanjam 2



DAKLE $r = \epsilon + [(a+b)(a+bb)^*(a+bb+ba(a+b))^*(\epsilon+ba)]$

Zadatak 12. & 13.

12. Svojsvom napunavanja dokaži da jezik $L_1 = \{a^n b^{2n} c^{2n} \mid n \geq 0\}$ nije regularan.

$$W = XYZ \quad \begin{array}{l} 1.) |XY| \leq p \\ 2.) |Y| > 0 \\ 3.) XY^iZ \in L \text{ i } i \geq 0 \end{array} \quad \left. \vphantom{\begin{array}{l} 1.) \\ 2.) \\ 3.) \end{array}} \right\} \text{uslovi}$$

$$W = \underbrace{a^p}_{XY} b^{2p} c^{2p}$$

$$|XY| \leq p$$

$$X = a^k$$

$$Y = a^l \quad (l > 0) \quad 2.) \checkmark$$

$$Z = a^m b^{2p} c^{2p}$$

$$(k+l+m=p) \quad 1.) \checkmark$$

$$XY^iZ \in L \text{ i } i \geq 0$$

$$XY^2Z = a^k a^{2l} a^m b^{2p} c^{2p}$$

$$XY^2Z = a^p a^l b^{2p} c^{2p}$$

$$\rightarrow a^p b^{2p} c^{2p} \neq a^p a^l b^{2p} c^{2p} \quad (\text{jer je } l > 0)$$

KONTRADIKCIJA

13. Svojsvom napuhavanja dokaži da jezik $L_1 = \{www \mid w \in \{0,1\}^*\}$ nije regularan.

$$W_1 = XYZ \quad \begin{array}{l} 1.) |XY| \leq p \\ 2.) |Y| > 0 \\ 3.) XY^iZ \in L \text{ i } i \geq 0 \end{array} \quad \left. \vphantom{\begin{array}{l} 1.) \\ 2.) \\ 3.) \end{array}} \right\} \text{uslovi}$$

$$W_1 = \underbrace{0^p 1^p 0^p 1^p 0^p 1^p}_{XY}$$

$$|XY| \leq p$$

$$X = 0^k$$

$$Y = 0^l \quad (l > 0) \quad 2.) \checkmark$$

$$Z = 0^m 1^p 0^p 1^p 0^p 1^p$$

$$(k+l+m=p) \quad 1.) \checkmark$$

$$XY^iZ \in L \text{ i } i \geq 0$$

$$XY^2Z = 0^k 0^{2l} 0^m 1^p 0^p 1^p 0^p 1^p$$

$$XY^2Z = 0^p 0^l 1^p 0^p 1^p 0^p 1^p$$

$$0^p 1^p 0^p 1^p 0^p 1^p \neq 0^p 0^l 1^p 0^p 1^p 0^p 1^p \quad (\text{jer je } l > 0)$$

KONTRADIKCIJA