Формування регулярного виразу для заданого скінченного автомату.

Приклад:

Розглянемо мову, яка розпізнається скінченним автоматом

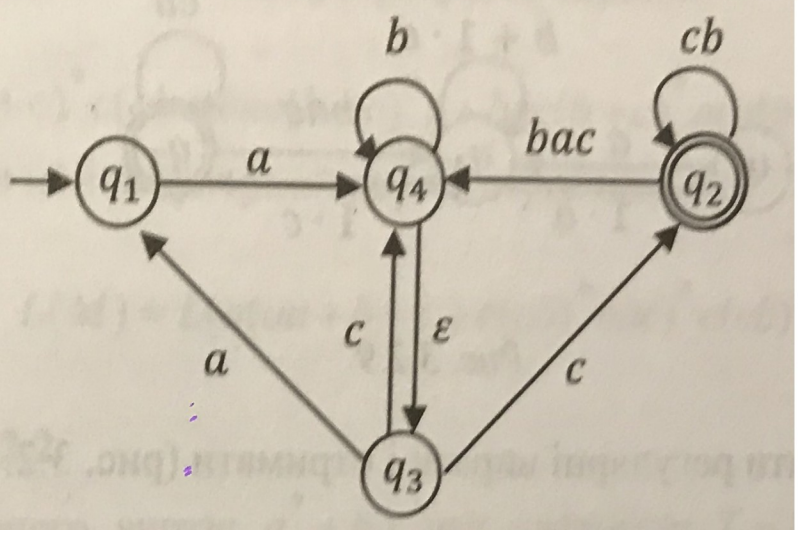
$$M(\{q_1,q_2,q_3,q_4\},\Sigma,\Delta,\{q_1\},\{q_2\}),$$

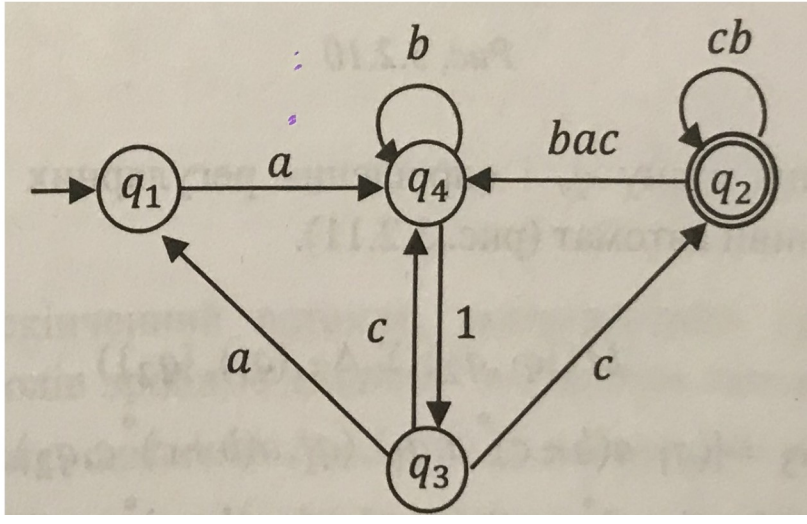
де

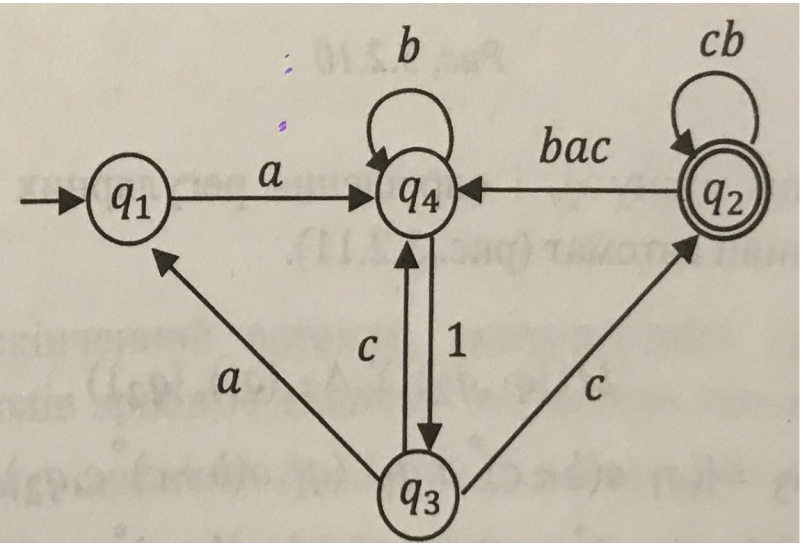
$\Sigma = \{a,b,c\}$ і

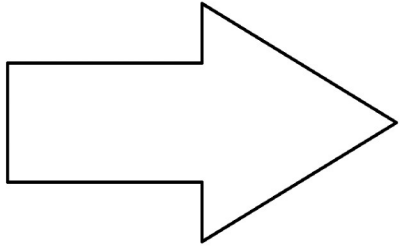
$\Delta = \{\langle q_1,a,q_4\rangle,\langle q_2,cb,q_2\rangle,$

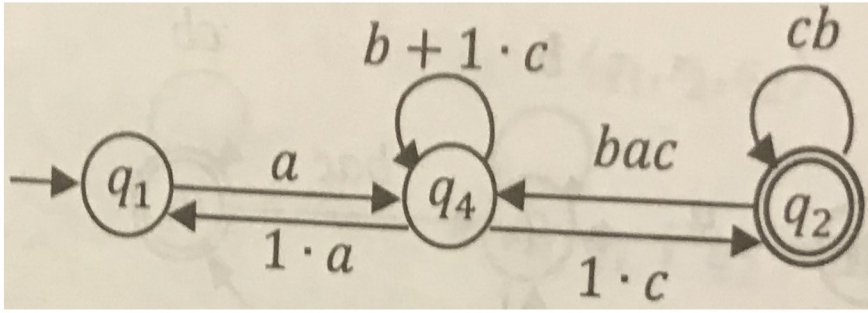
$\langle q_2,bac,q_4\rangle,\langle q_3,a,q_1\rangle,\langle q_3,c,q_2\rangle,\langle q_3,c,q_4\rangle,\langle q_4,\varepsilon,q_3\rangle,\langle q_4,b,q_4\rangle\}$

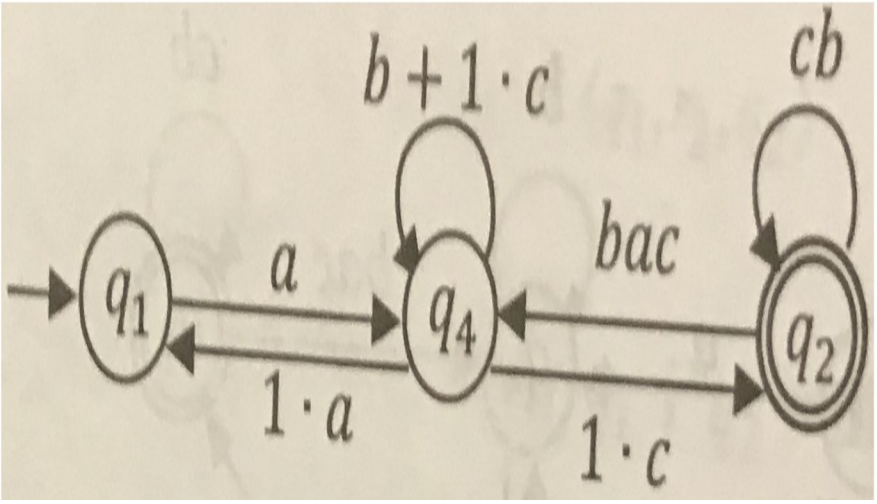


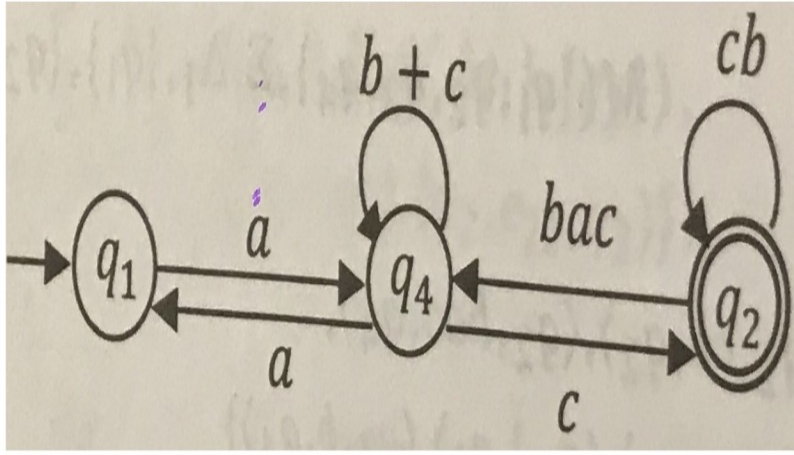



b
cb
bac
a
q_1
q_4
q_2
c
1
a
c
q_3




$b + 1 \cdot c$
cb
bac
a
q_1
q_4
q_2
$1 \cdot a$
$1 \cdot c$

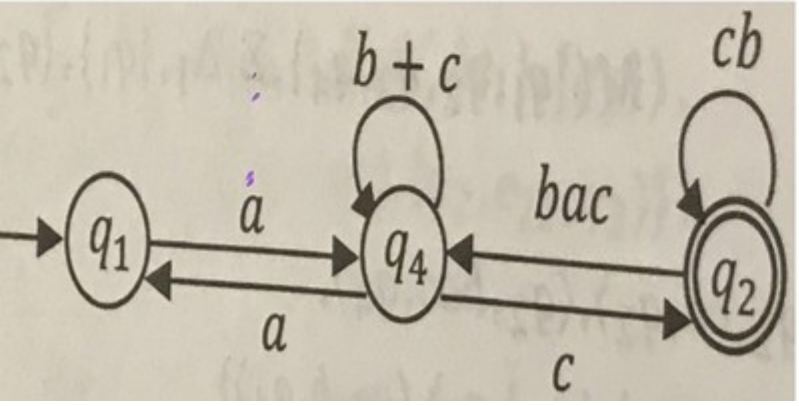

$b+1\cdot c$
cb
q_1
a
q_4
bac
q_2
$1\cdot a$
$1\cdot c$

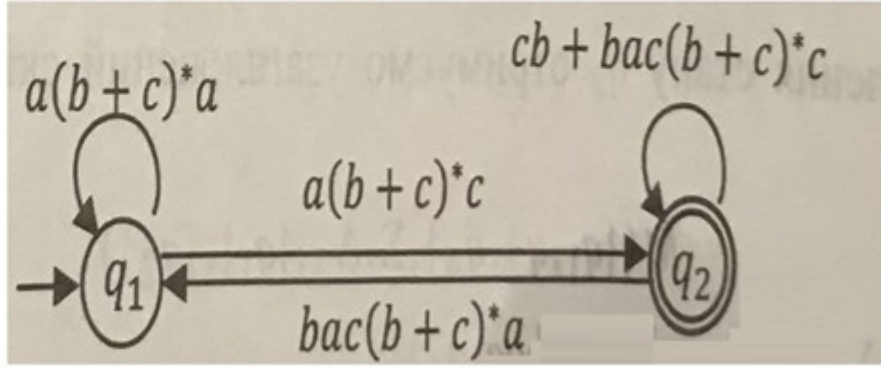

$b+c$
cb
q_1
a
q_4
bac
q_2
a
c

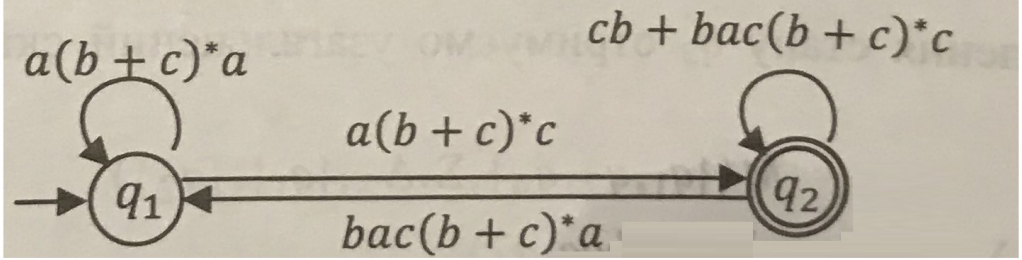
$$M(\{q_1,q_2\},\Sigma,\Delta_3,\{q_1\},\{q_2\}),$$

$$\Delta_3=\{\langle q_1,a(b+c)^*a,q_1\rangle,\langle q_1,a(b+c)^*c,q_2\rangle,$$

$$\langle q_2,bac(b+c)^*a,q_1\rangle,\langle q_2,cb+bac(b+c)^*c,q_2\rangle,\}.$$







Отже, мова $L(M)$ задається регулярним виразом

$$(a(b+c)^* a)^* a(b+c)^* c(cb+bac(b+c)^* c+bac(b+c)^* a(a(b+c)^* a)^* a(b+c)^* c)^* .$$

** вираз можна спростити*