Glushkov $L = (a+\varepsilon)(b+aa)^*(b+\varepsilon)$

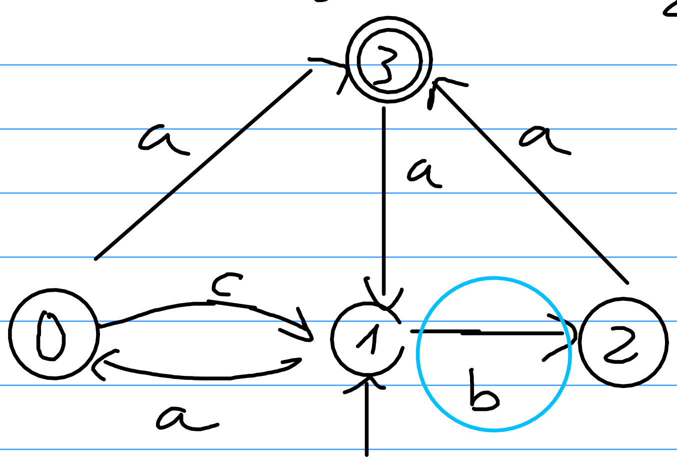
Linearisation $x_1 \to x1$ $\varepsilon \to$ eps ou e.

$(x_1+\varepsilon)(x_2+x_3x_4)^*(x_5+\varepsilon)$

	Succ.
0	1, 2, 3, 5, fin.
1	2, 3, 5, fin
2	2, 3, 5, fin
3	4
4	2, 3, 5, fin
5	fin

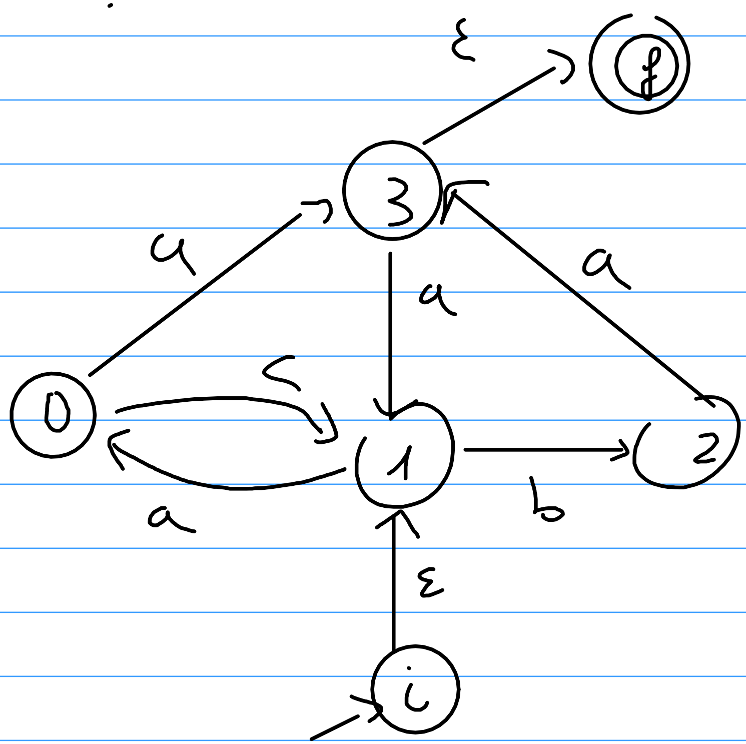
	a	b	
0	1, 3	2, 5	$\leftrightarrow$
1	3	2, 5	$\leftarrow$
2	3	2, 5	$\leftarrow$
3	4		
4	3	2, 5	$\leftarrow$
5			$\leftarrow$

Brzozowski : t_2 du TD4 Exo 1

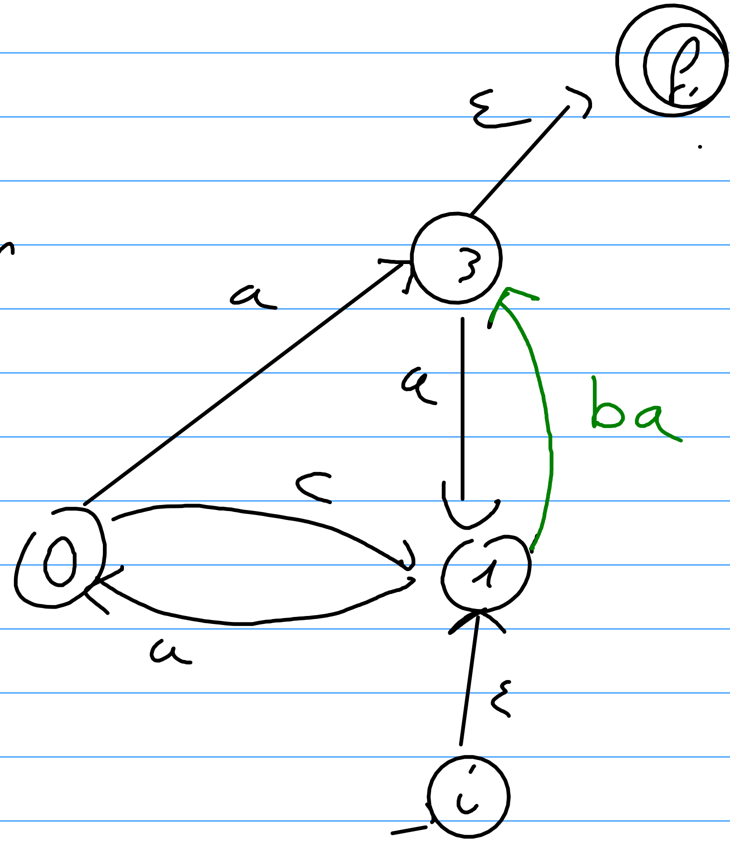


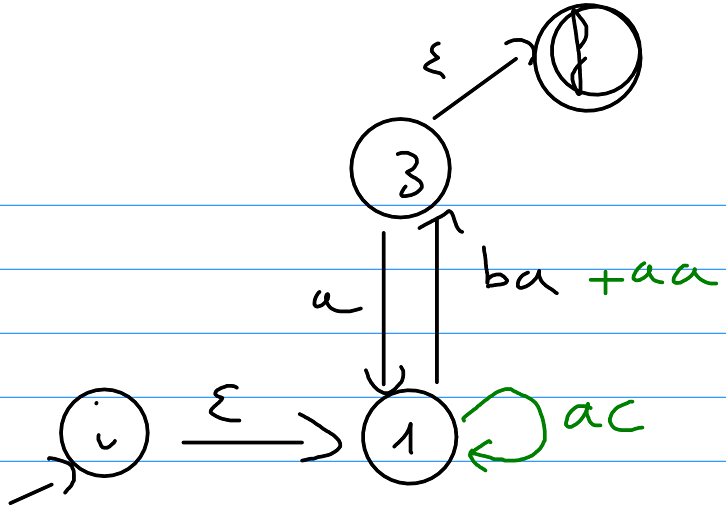
ordre d'élimination :

2 , 0 , 3 , 1

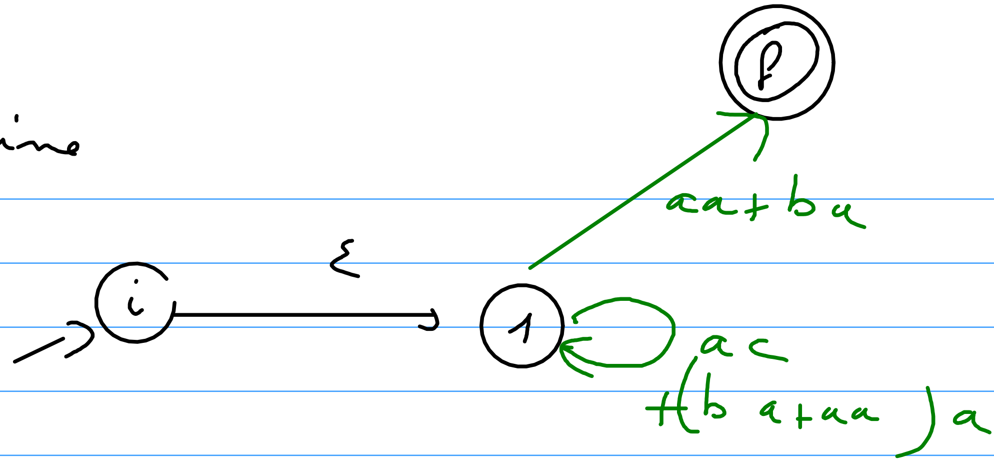


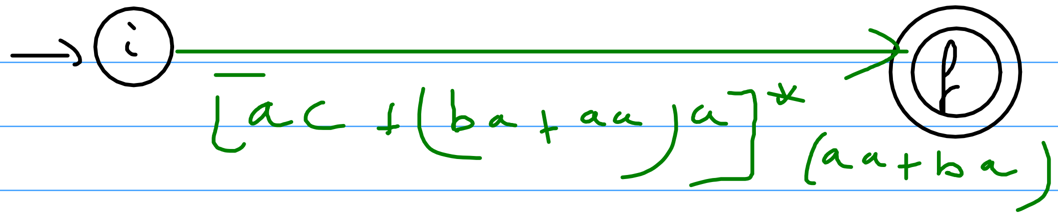
élimination de 2





supprime 3 $\longrightarrow$





simplification. $[ac + (b+a)aa]^*(a+b)a$

Exo 2 du TD 8 5 et 6

5) le langage des mots contenant un nbre pair de a

$[\varepsilon] = (b^* a b^* a)^* b^*$

$[a] = (b^* a b^* a)^* b^* a b^*$

$u^{-1}.L = \{ w \mid u.w \in L \}$

$u \sim v$ si $u^{-1}.L = v^{-1}.L$

$u \sim v$ si $\forall w \ (u.w \in L \Leftrightarrow v.w \in L)$

$w \in u^{-1}L \Leftrightarrow w \in v^{-1}L$

6) $a^+ b^+$

$[\varepsilon] = \varepsilon$ $\qquad \varepsilon^{-1}.L = a^+ b^+$

$[a] = a^+$ $\qquad a^{-1}.L = a^{-1}.(a^+ b^+) = a^{-1}(a a^* b^+) = a^* b^+$

$[ab] = a^+ b^+$ $\qquad (ab)^{-1}.L = b^*$

$[b] = .$ $\qquad b^{-1}.L = \emptyset$

$= A^* \setminus \{ a^* + a^+ b^+ \} = b^+.(a+b)^* + a^+ b^+ a (a+b)^*$

$$(ab)^{-1}L = b^{-1}.(a^{-1}L) = b^{-1}.(a^* b^+)$$

$$= \underbrace{b^{-1}.(a^* b b^*)}_{} = b^*$$

$$b^{-1}.(L_1 L_2) = (b^{-1}.L_1)L_2 + b^{-1}L_2 \quad \text{si } L_1 \ni \varepsilon$$

donc

$$b^{-1}(a^* b b^*) = \underbrace{(b^{-1}.a^*)\, b b^*}_{} + b^{-1}.bb^*$$

$$= \emptyset + b^*$$

TD 9

$L_3 = \{ w \mid |w|_a \geq 2 \} = b^* a b^* a (a+b)^*$

$\varepsilon^{-1} . L_3 = L_3 = E_1$

a : $a^{-1} L_3 = b^* a (a+b)^* = E_2$

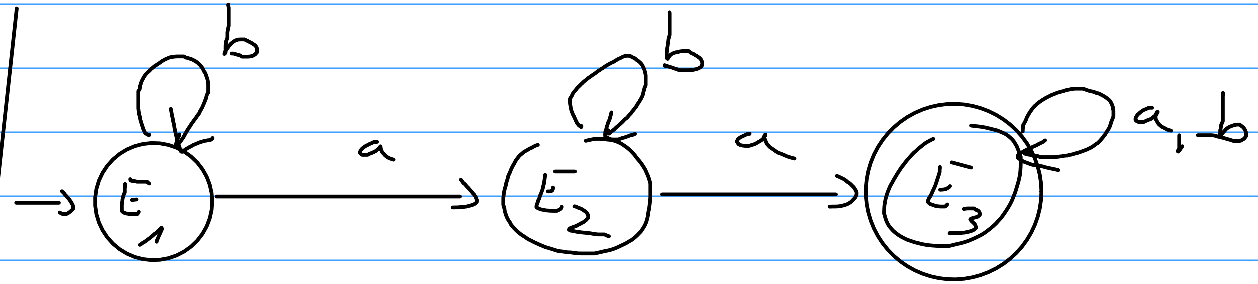
b : $b^{-1} . L_3 = L_3 = E_1$

a : $(aa)^{-1} L_3 = (a+b)^* = E_3$

b : $(ba)^{-1} L_3 = E_2$

a : $(aaa)^{-1} L$ E_3

b : $(baa)^{-1} L$. E_3



E_i acceptant si $\varepsilon \in E_i$

Automate minimal complet.

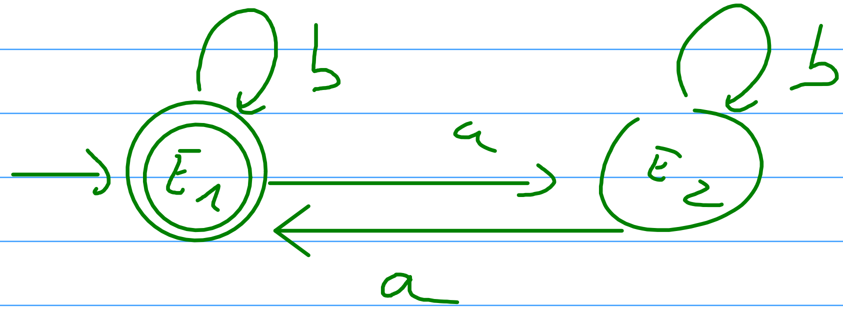
$$L_5 = \{ w \in \{a,b\}^* \mid |w|_a \text{ est pair} \}$$

$$\varepsilon^{-1}.L_5 = L_5 = E_1$$

$$\varepsilon^{-1}.L_5 \xrightarrow{a} a^{-1}.L_5 \qquad \varepsilon^{-1}.L_5 \xrightarrow{b} b^{-1}.L_5 = E_1$$

$$a^{-1}.L_5 = \{ w \in (a+b)^* \mid |w|_a \text{ est impair} \} = E_2$$

$$E_2 \xrightarrow{a} (aa)^{-1}L_5 = E_1 \qquad E_2 \xrightarrow{b} (ba)^{-1}L_5 = E_2$$



$$\overbrace{aa.\underbrace{\sim\sim\sim\sim}_{\text{nb pair de } a}}^{\text{nb pair de } a}$$

$$(aa)^{-1}.L_5 = L_5$$

$L_4 = \{w \in \{a,b\}^* \mid w \text{ contient le facteur } ab\}$

$= (a+b)^* ab (a+b)^*$

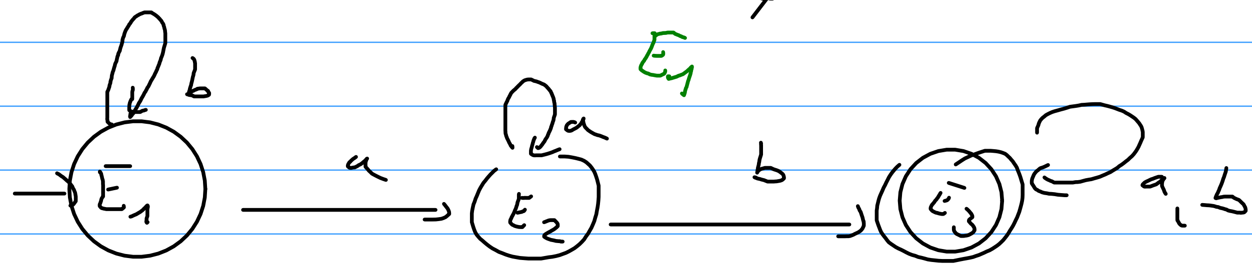
$\varepsilon^{-1} L_4 = L_4 = E_1$

$\xrightarrow{a}$ $a^{-1}.L_4$

$(a+b)^* ab (a+b)^* + b(a+b)^* = E_2$

$\xrightarrow{b}$ $b^{-1}.L_4$

E_1



From E_2:

$\xrightarrow{a}$ $(aa)^{-1}.L_4$

$= E_2$

$\xrightarrow{b}$ $(ab)^{-1}.L_4$

$(a+b)^* ab (a+b)^*$

$+ (a+b)^*$

$= (a+b)^* = E_3$

$\xrightarrow{a} E_3$

$\xrightarrow{b} E_3$