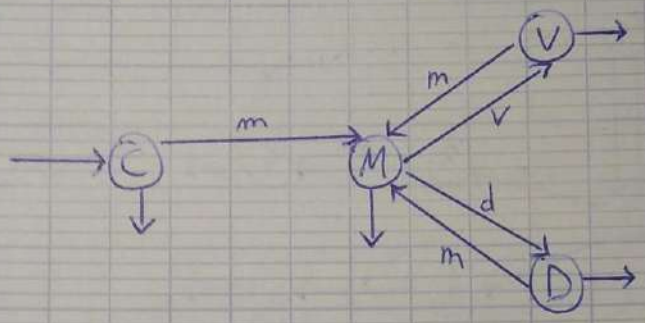
1
TD 1
Maths pour l'informatique

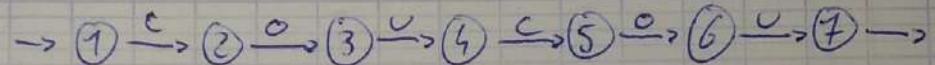
Chazal Baptiste

Exercice 1 :



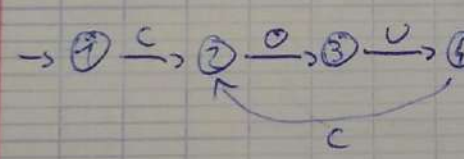
Exercice 2 :

a)

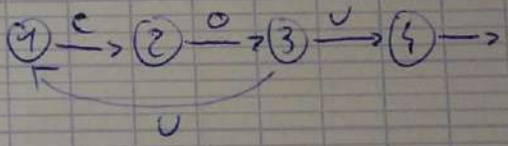


b)

(AD)

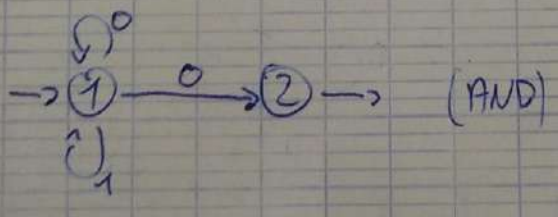


ou (AND)

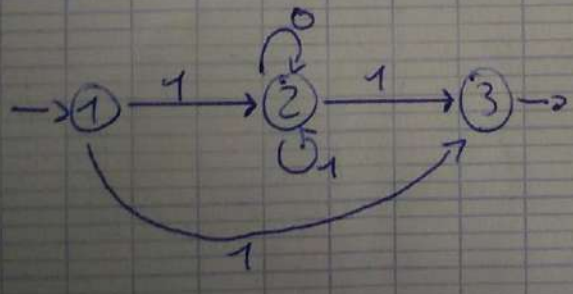


Exercice 3 :

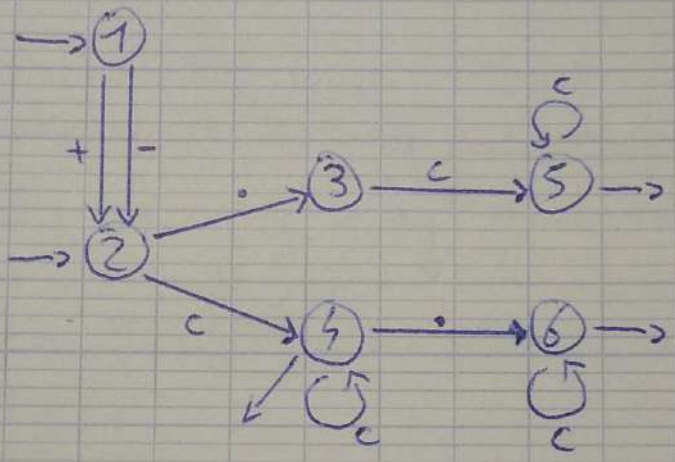
a)



b)



c)



c : chiffres

d)

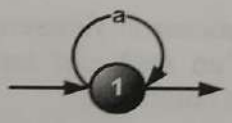
Exercice 6

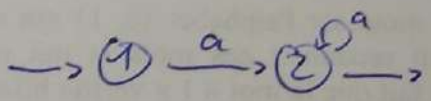
Pour chacun des automates suivantes, (a) dire s'il est standard, (b) s'il ne l'est pas, le standardiser, (c) s'il reconnaît le mot vide, construire l'automate qui reconnaît le même langage à l'exception du mot vide :

Aucun n'est standard

6-1

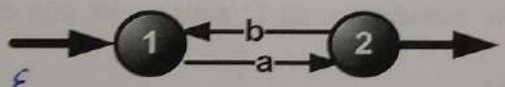
reconnait ε

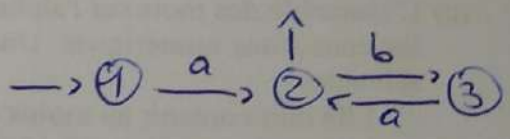




6.2

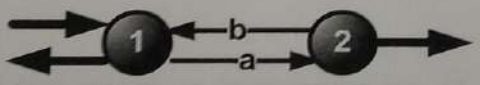
ne reconnait pas ε

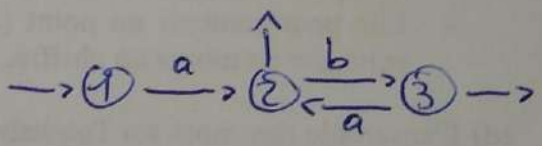




6.3

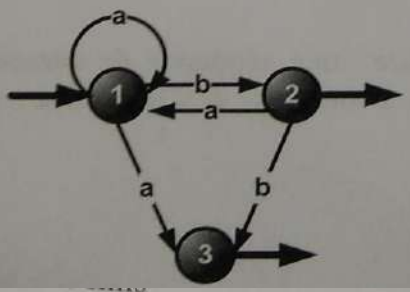
reconnait ε

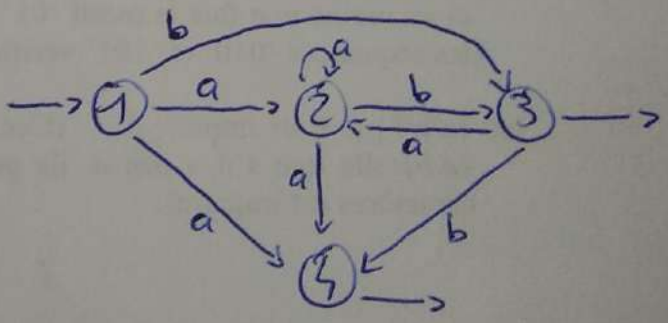




6.4

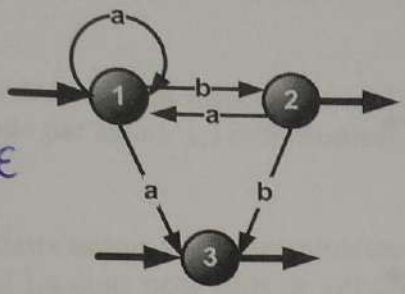
ne reconnait pas ε

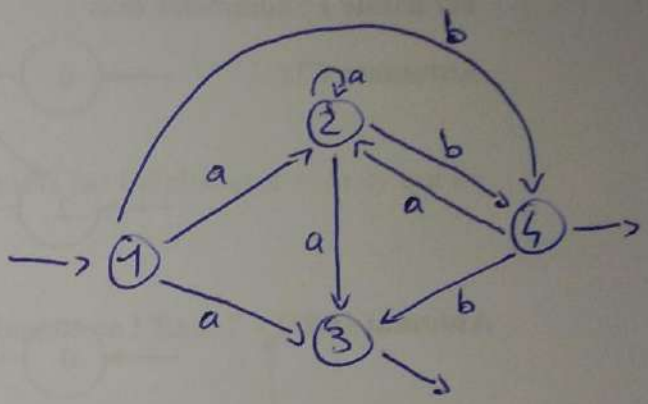




6.5

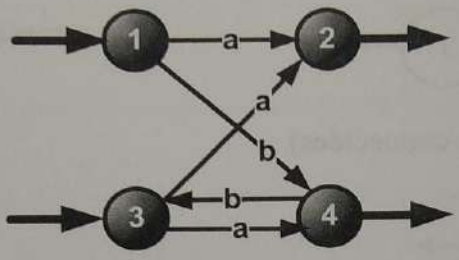
ne reconnait pas ε

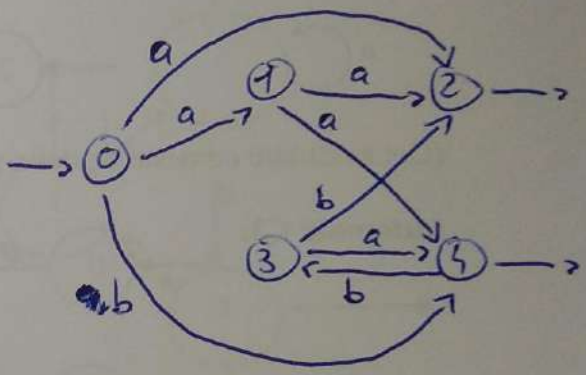




6.6

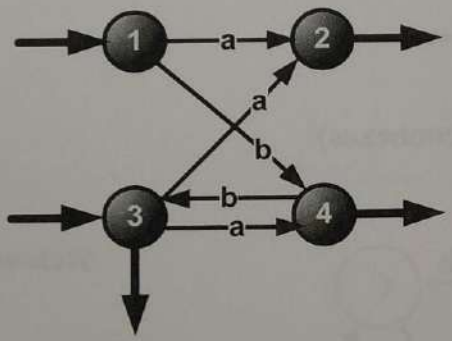
ne reconnait pas ε

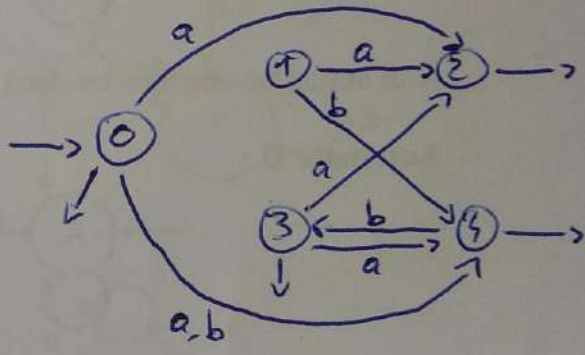




6.7

reconnait ε





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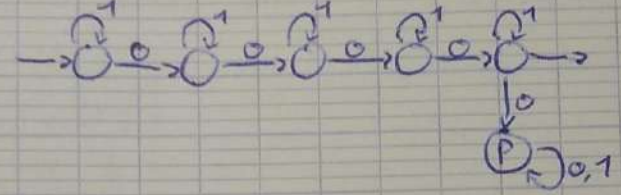
Exercice 8 :

a)

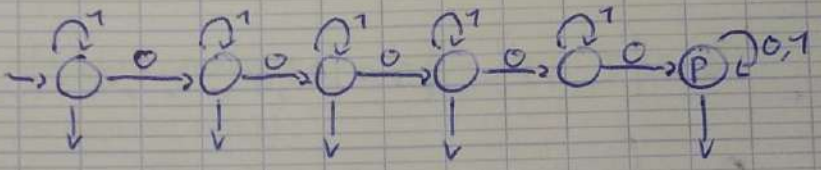
Complémentaire $\bar{L}$, de L : ensemble des mots sur $\{0,1\}$ contenant exactement quatre zéros.

L :



AD non complet
avec P : ADC

$\bar{L}$:



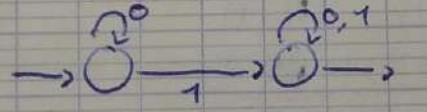
$\bar{L} = A^* \setminus L$

A^* : tout alphabet + mot vide

b)

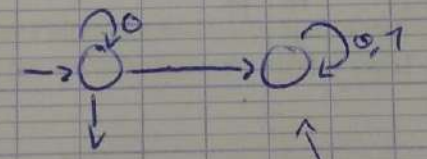
L : ensemble des mots sur $\{0,1\}$ contenant au moins un 1.

L :



ADC

$\bar{L}$:

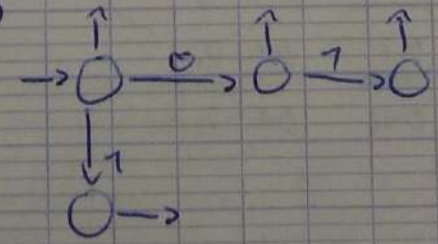


sert de poubelle

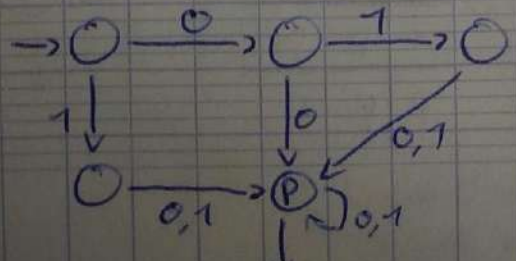
c)

$L = \{\varepsilon, 0, 1, 01\}$

Pour L :



Pour $\bar{L}$:



Exercice 13 :

	a	b
E	0	1	1,2
S	1	/	0,2
E,S	2	0,1	/

	a	b	
02	0,1	1,2	T T
01	1	0,1,2	T T
12	0,1	0,2	T T
1	P	0,2	NT T
012	0,1	0,1,2	T T
P	P	P	NT NT

$\Theta_0 = \{T, NT\} = \{T = \{02, 01, 12, 1, 012\}, NT = \{P\}\}$

$\Theta_1 = \{(02, 01, 12, 012), (1), (P)\}$

02	01 12	A	A
01	01 012	A	A
12	01 02	A	A
012	01 012	A	A

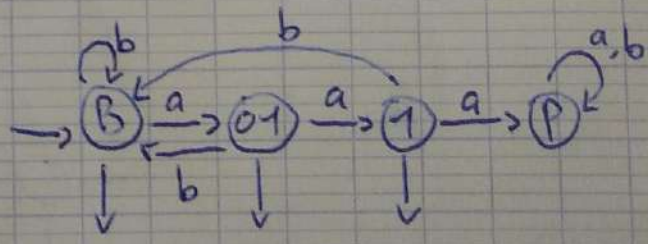
$\Theta_2 = \{(02, 12, 012), (01), (1), (P)\} = \Theta_3 = \Theta_{fin}$

B

02	01 12	01	B
12	01 02	01	B
012	01 012	01	B

On a donc :

B	01	B
01	1	B
1	P	B
P	P	P



Entrée : B car il contient 02

Sortie : Tous sauf P