

COMPOSANTS SEMI-CONDUCTEURS

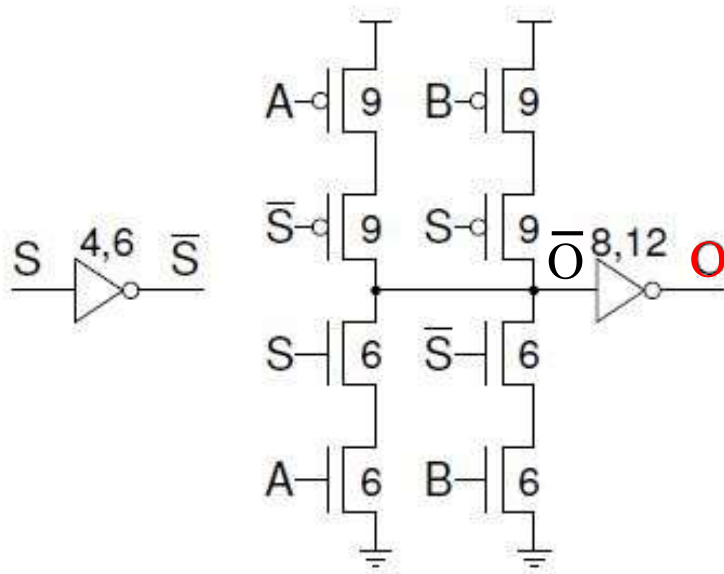
XII) Solutions S12

P.A. Besse

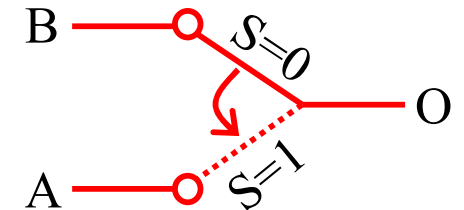
EPFL

Exercice 12.1a: 2-1 multiplexer

Déterminez la table de vérité de ce schéma et montrez que la sortie «O» correspond à un 2-1 MUX («O»=A si S=1 et «O»=B si S=0)



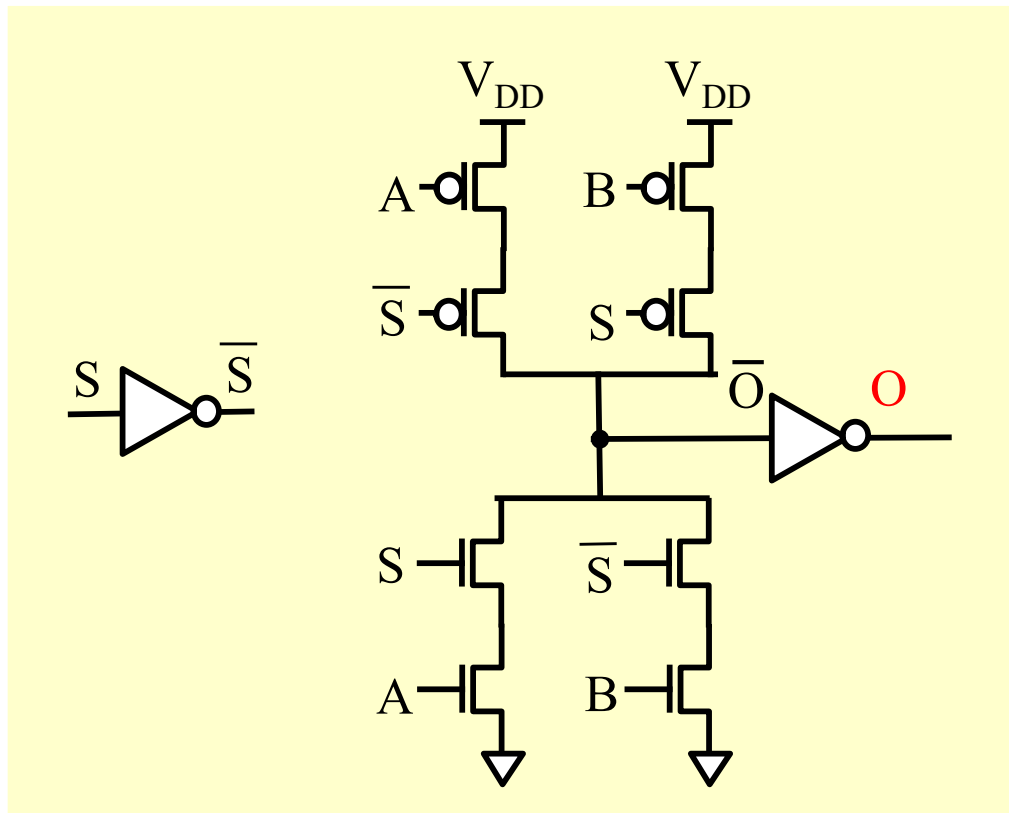
S	A	B	$\overline{O}$	O	O
0	0	0			
0	0	1			
0	1	0			
0	1	1			
1	0	0			
1	0	1			
1	1	0			
1	1	1			



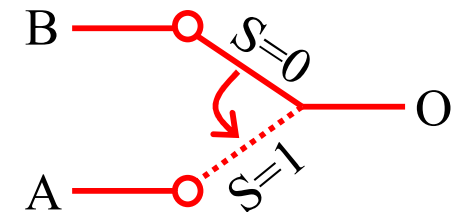
Zimmermann, Fichtner, IEEE journal of solid-state circuits, Vol. 32, No. 7, pp. 1-12.

Exercice 12.1a: 2-1 multiplexer

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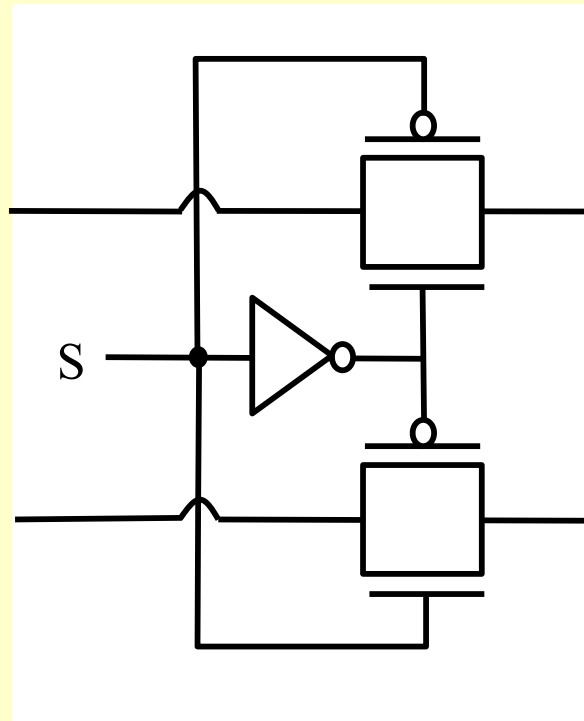


S	A	B	$\bar{O}$	O	O
0	0	0	$\bar{B}$	B	0
0	0	1	$\bar{B}$	B	1
0	1	0	$\bar{B}$	B	0
0	1	1	$\bar{B}$	B	1
1	0	0	$\bar{A}$	A	0
1	0	1	$\bar{A}$	A	0
1	1	0	$\bar{A}$	A	1
1	1	1	$\bar{A}$	A	1

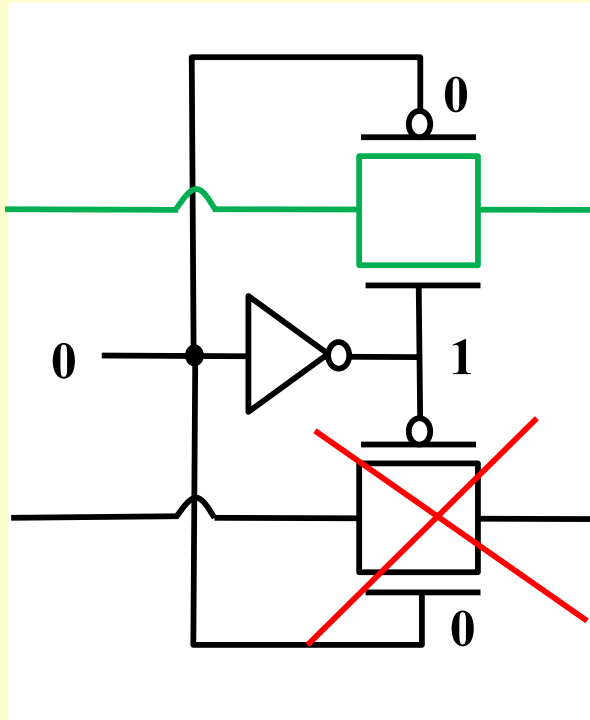


(12 transistors)

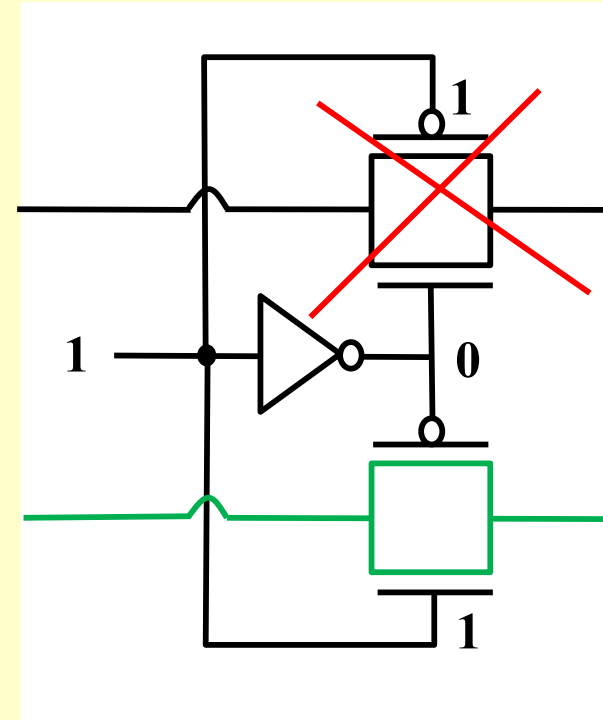
Exercice 12.1: étudiez ce schéma



Exercice 12.1: applications

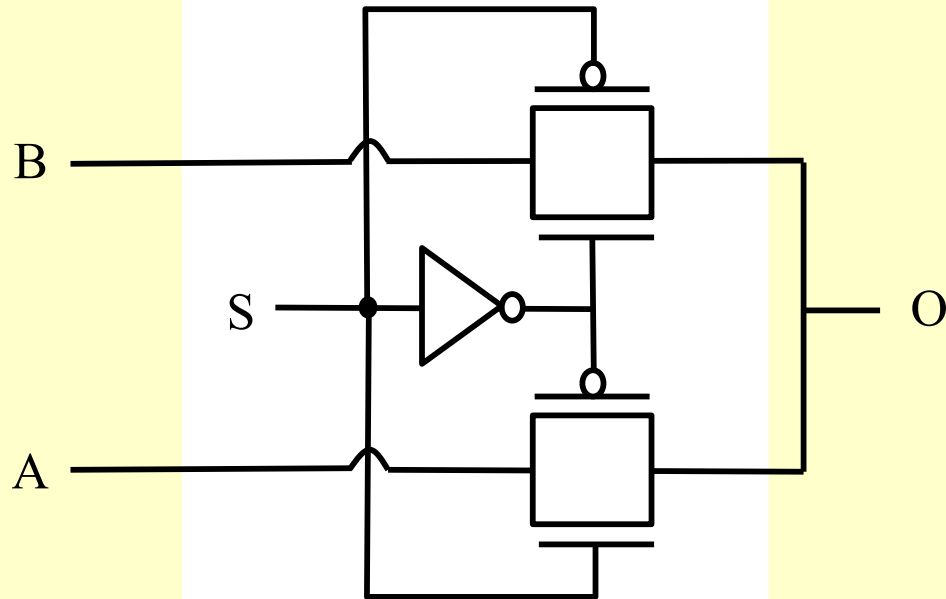


S=0

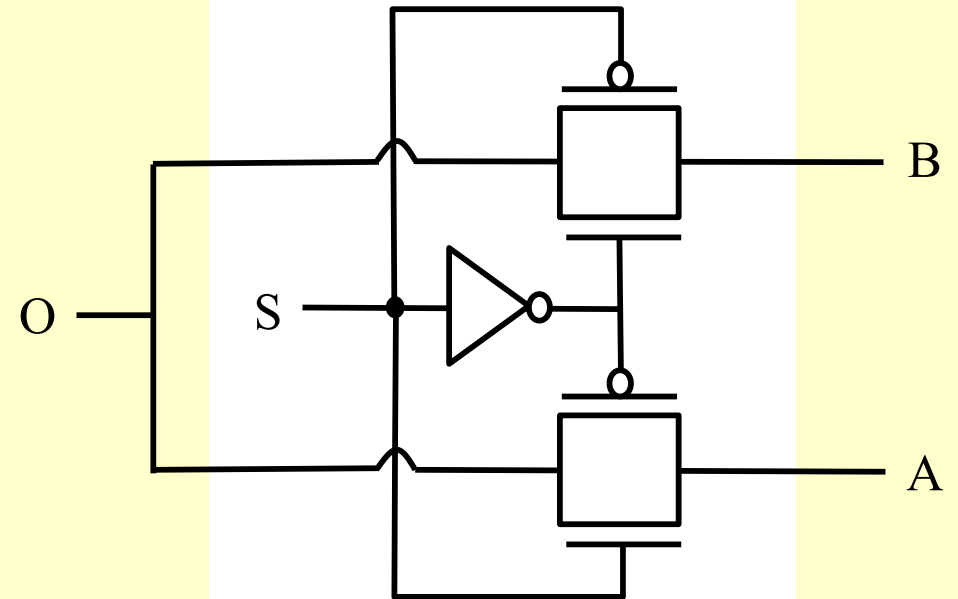
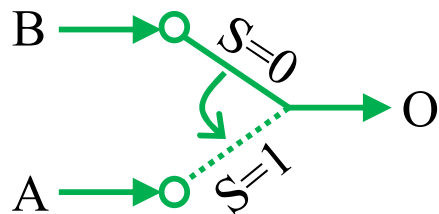


S=1

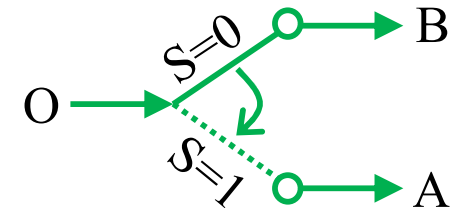
Exercice 12.1: applications



Mux 2:1



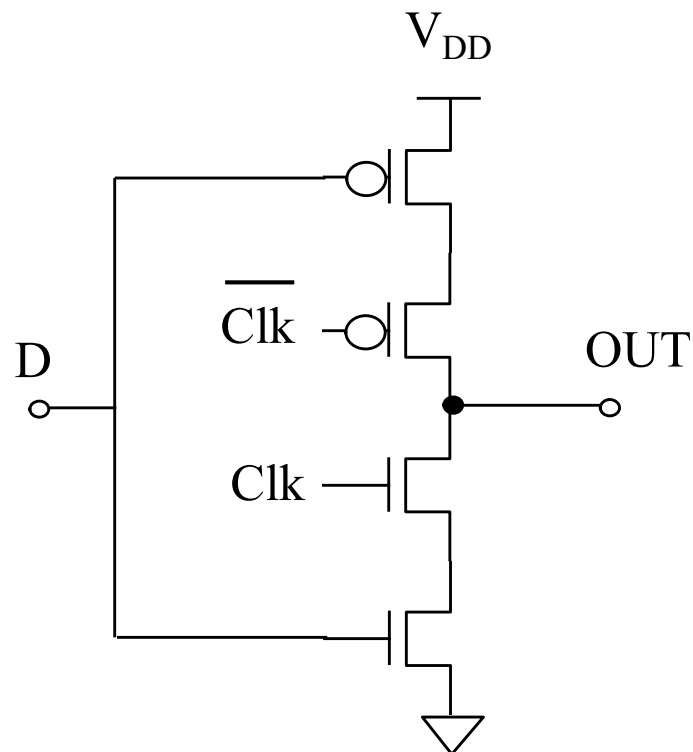
Demux 1:2



Exercice 12.4: Tri-state inverter

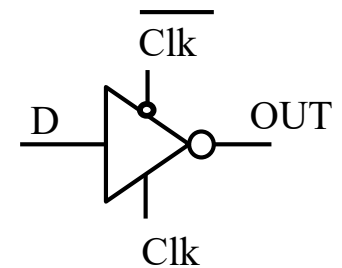
Faites la table de vérité

Etudiez le schéma ci-dessous

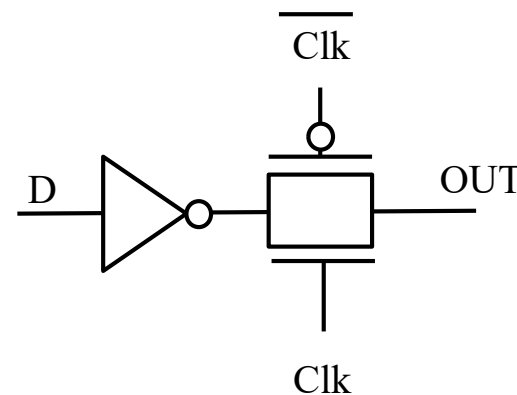


Clk	D	OUT
0	0	
0	1	
1	0	
1	1	

Symbole



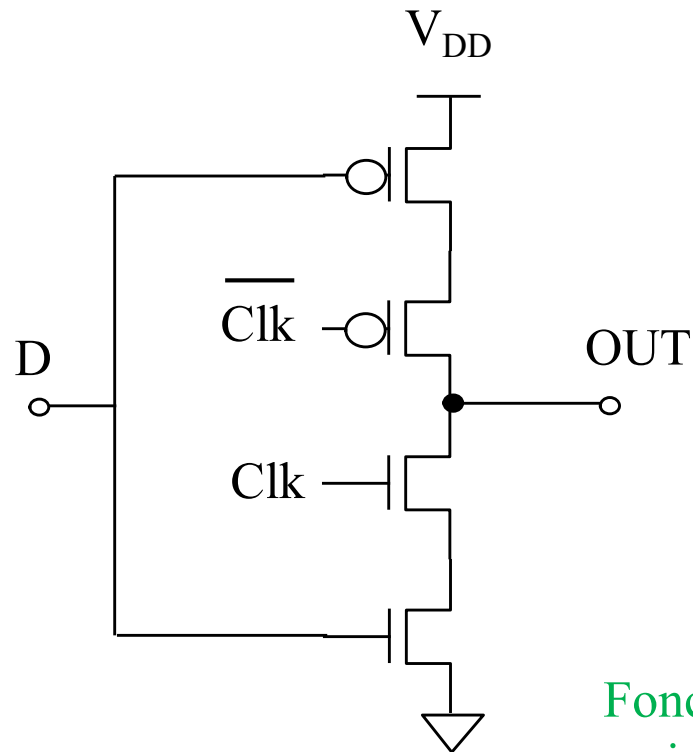
Comparez avec:



Exercice 12.4: Tri-state inverter

Faites la table de vérité

Etudiez le schéma ci-dessous



Fonction identique
mais schéma différent

Clk	D	OUT
0	0	Floating
0	1	Floating
1	0	$\overline{D}=1$
1	1	$\overline{D}=0$

Symbole

