

PL.

C6

11 Nov 2020

16X

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

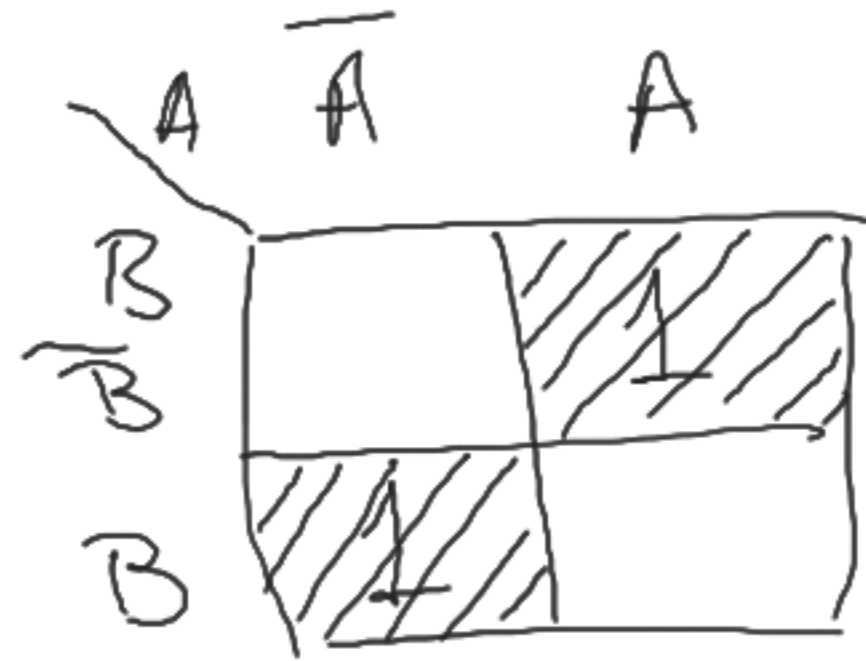
$$f = A\bar{B} + \bar{A}B = A \oplus B$$

a) Venn Diagram



$$f: U \rightarrow U$$

b) Venn Canonical



		$\bar{A}$ A			
$\bar{C}$	$\bar{A}\bar{B}\bar{C}$	$\bar{A}B\bar{C}$	$AB\bar{C}$	$A\bar{B}\bar{C}$	
	0	2	6	4	
C	$\bar{A}BC$	$\bar{A}B\bar{C}$	ABC	$A\bar{B}C$	
	1	3	7	5	
		$\bar{B}$ B		$\bar{B}$	

		$\bar{A}$		A		
		$\bar{B}$		B		
$\bar{C}$	$\bar{A}\bar{B}\bar{C}\bar{D}$	$\bar{A}\bar{B}\bar{C}D$	$\bar{A}B\bar{C}\bar{D}$	$\bar{A}B\bar{C}D$	$\bar{D}$	
	0	4	C	8		
	$\bar{A}\bar{B}C\bar{D}$	$\bar{A}\bar{B}CD$	$\bar{A}BC\bar{D}$	$\bar{A}BCD$		
	1	5	D	9		
C	$A\bar{B}\bar{C}\bar{D}$	$A\bar{B}C\bar{D}$	$AB\bar{C}\bar{D}$	$AB\bar{C}D$	D	
	2	6	E	A		
	$A\bar{B}C\bar{D}$	$A\bar{B}CD$	$ABC\bar{D}$	$ABCD$		
	3	7	F	B		
		$\bar{B}$		B		
		$\bar{A}$		A		

		$\bar{C}$		C		
		$\bar{D}$		D		
$\bar{A}$	$\bar{A}\bar{B}\bar{C}\bar{D}$	$\bar{A}\bar{B}\bar{C}D$	$\bar{A}B\bar{C}\bar{D}$	$\bar{A}B\bar{C}D$	$\bar{B}$	
	0	1	3	2		
	$\bar{A}\bar{B}C\bar{D}$	$\bar{A}\bar{B}CD$	$\bar{A}BC\bar{D}$	$\bar{A}BCD$		
	4	5	7	6		
A	$A\bar{B}\bar{C}\bar{D}$	$A\bar{B}\bar{C}D$	$AB\bar{C}\bar{D}$	$AB\bar{C}D$	B	
	8	9	B	A		
	$A\bar{B}C\bar{D}$	$A\bar{B}CD$	$ABC\bar{D}$	$ABCD$		
	C	D	F	E		
		$\bar{D}$		D		
		$\bar{C}$		C		

V-K Maps

C/D \ AB				
	00	01	11	10
00	0 0000	4 0100	12 1100	8 1000
01	1 0001	5 0101	13 1101	9 1001
11	3 0011	7 0111	15 1111	11 1011
10	2 0010	6 0110	14 1110	10 1010

m - mintermi - Σ

M - maxtermi - $\prod$

$\Sigma(1, 2, 4, 11, 13)$

Mintermi - sunt acele valori de intrare scrise ca sumă de produse pt situațiile în care valoarea 1

Maxtermii (de Morgan) - constau din produse de sume și val de intrare se iau negate. Aceștia sunt scriși doar pt stările în care val de ieșire 0

$$FCD = m()$$

$$FCC = M()$$

Poarta



$$A1 = A$$

$$A0 = 0$$

și

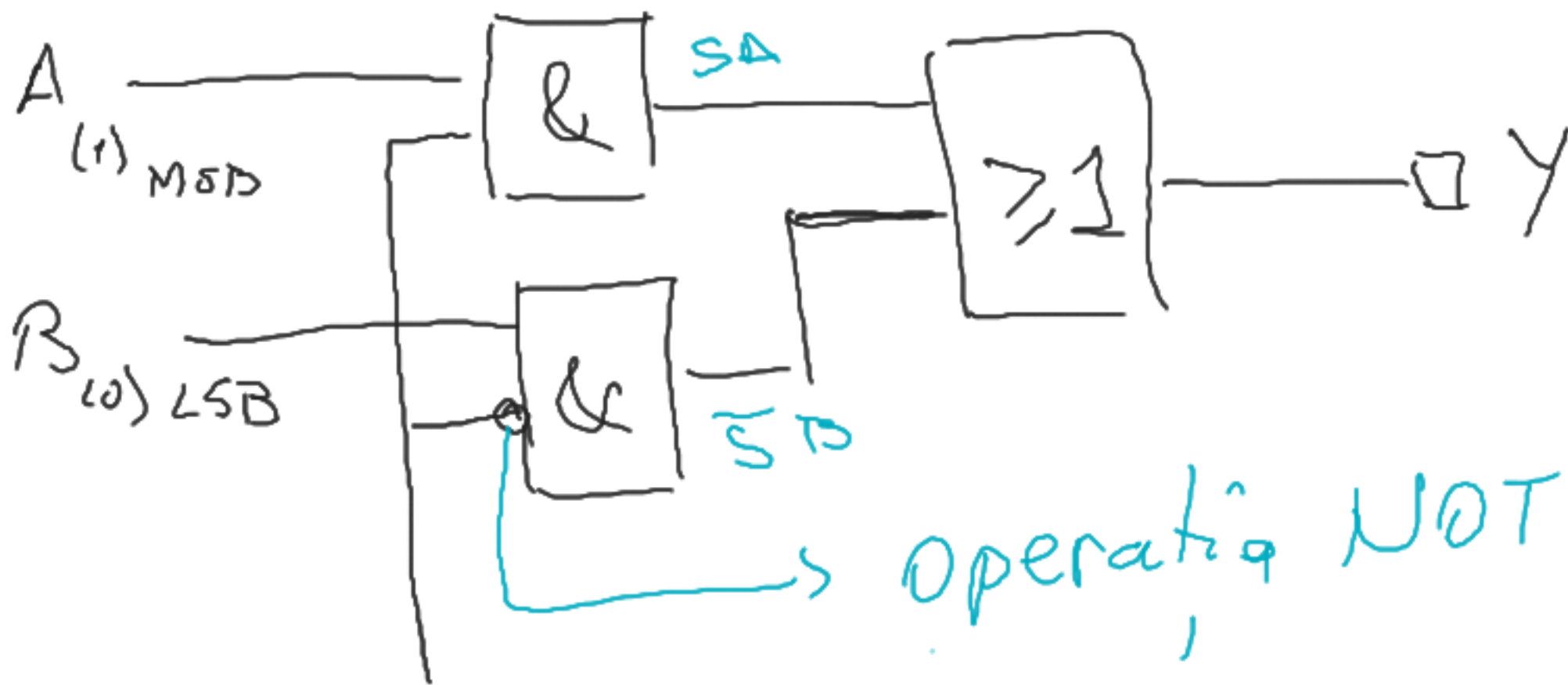
A	B	AB
0	0	0
0	1	0
1	0	0
1	1	1

$$f = f(A, B) =$$

$$2^n \text{ unde } n = 2 \rightarrow 2^2 = 4$$

ENABLE - permite intrării A să
iasă la Y doar atunci când
EA este 1

E	A	Y
0	0	0
0	1	0
1	0	0
1	1	1



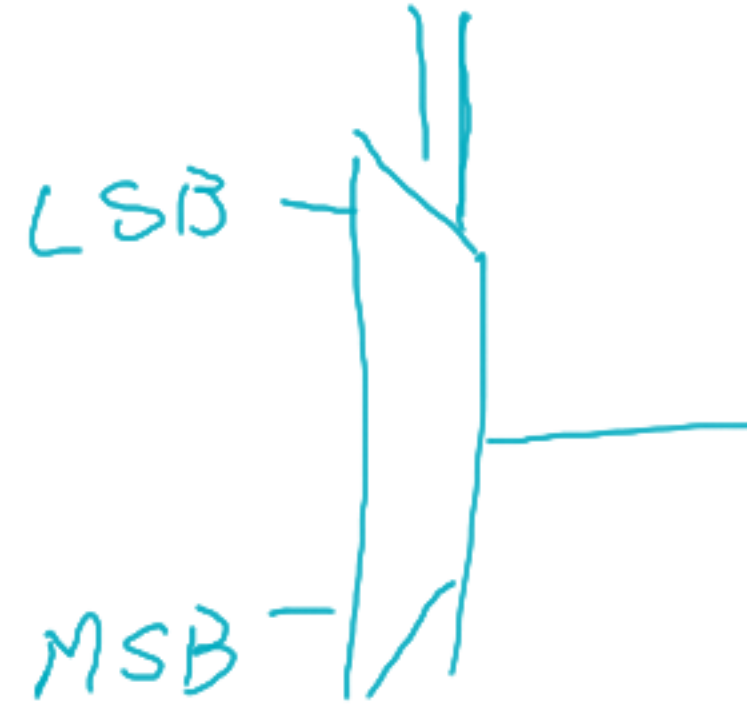
Multiplexorul pe 2
bitti



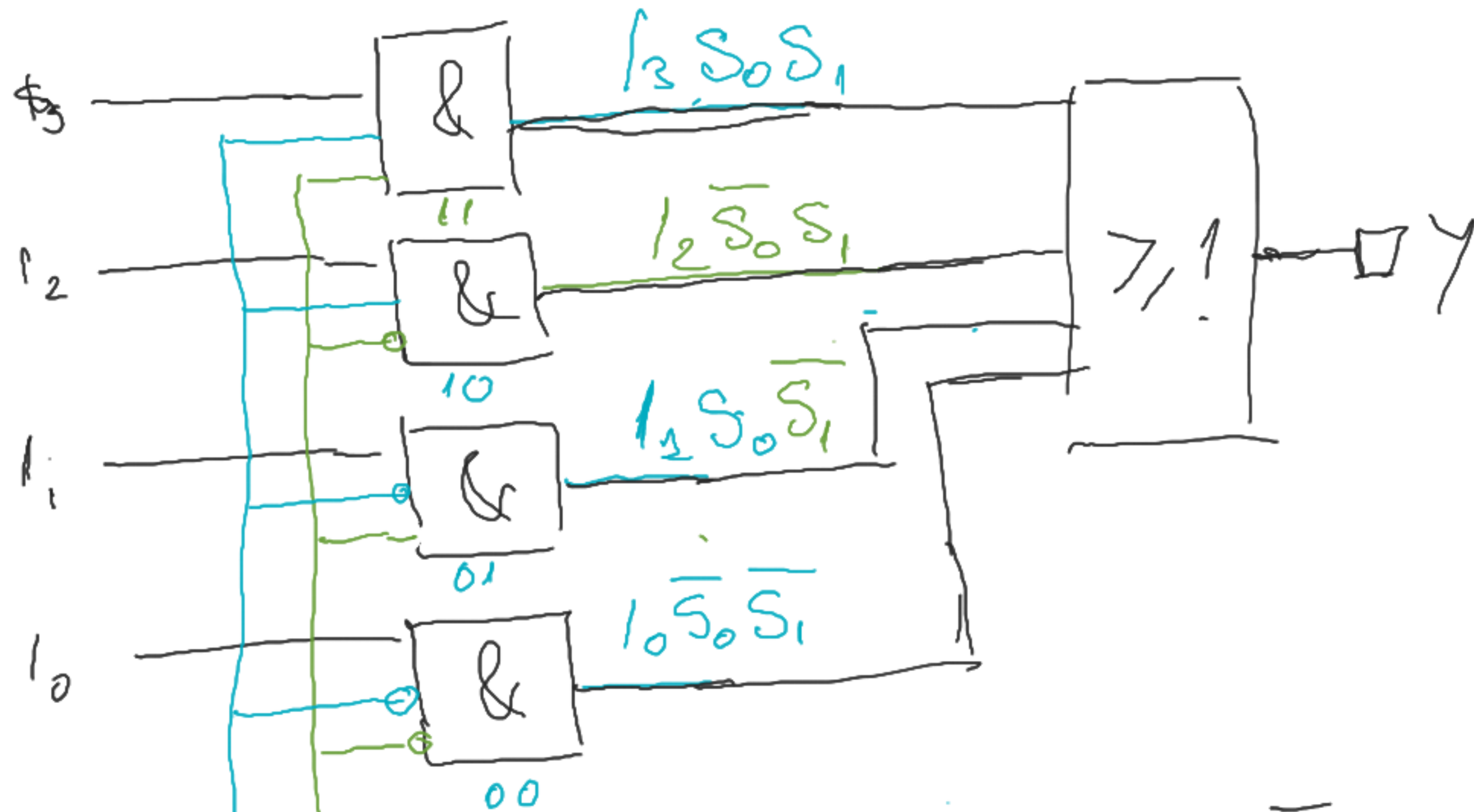
$$S = 0 \Rightarrow Y = B$$

$$S = 1 \Rightarrow Y = A$$

$$Y = \bar{S}B + SA$$



00000



$\dim(1) = 4 = 2^2$
2 biți de selecție

S_0	S_1	Y
0	0	1 ⁰
0	1	1 ¹
1	0	1 ²
1	1	1 ³

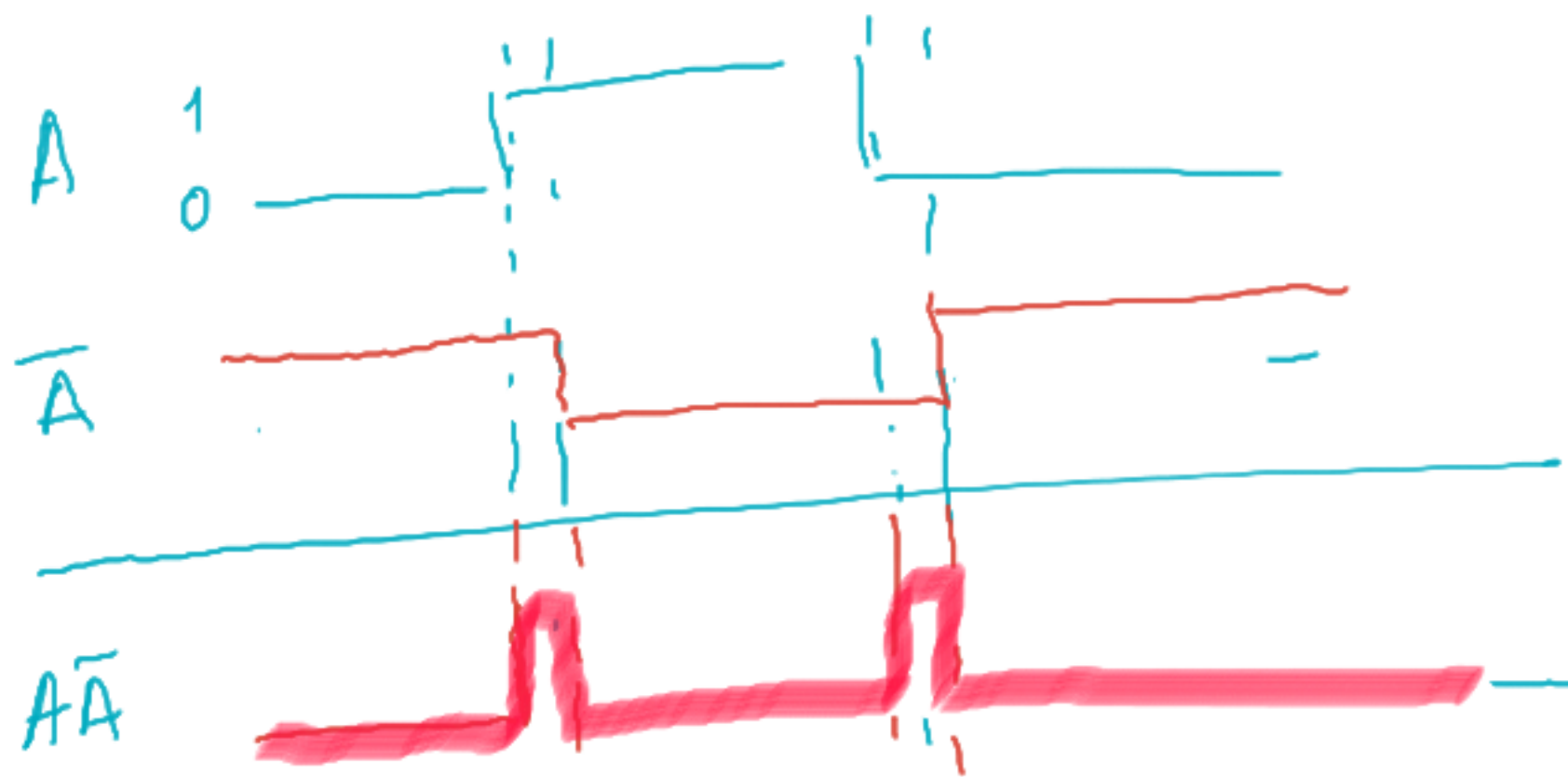
$$Y = I_0 \bar{S}_0 \bar{S}_1 + I_1 S_0 \bar{S}_1 + I_2 \bar{S}_0 S_1 + I_3 S_0 S_1$$

$S_1, \bar{S}_0$ - semnalele de selecție
- semnalul de adresă

Atunci când semnalul de intrare este barat ($\bar{e}$)
acestea se activează la valoarea 0.



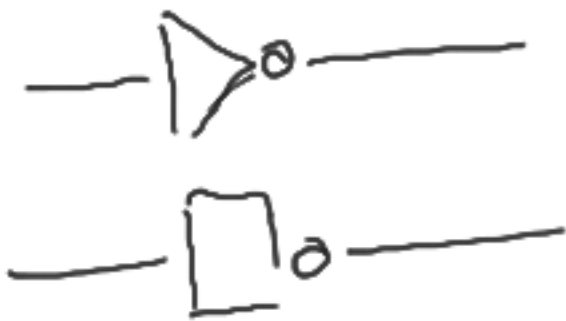
- Detector de tranziție
- Reductor de puls



Generarea de funcții logice folosind Mux-uri

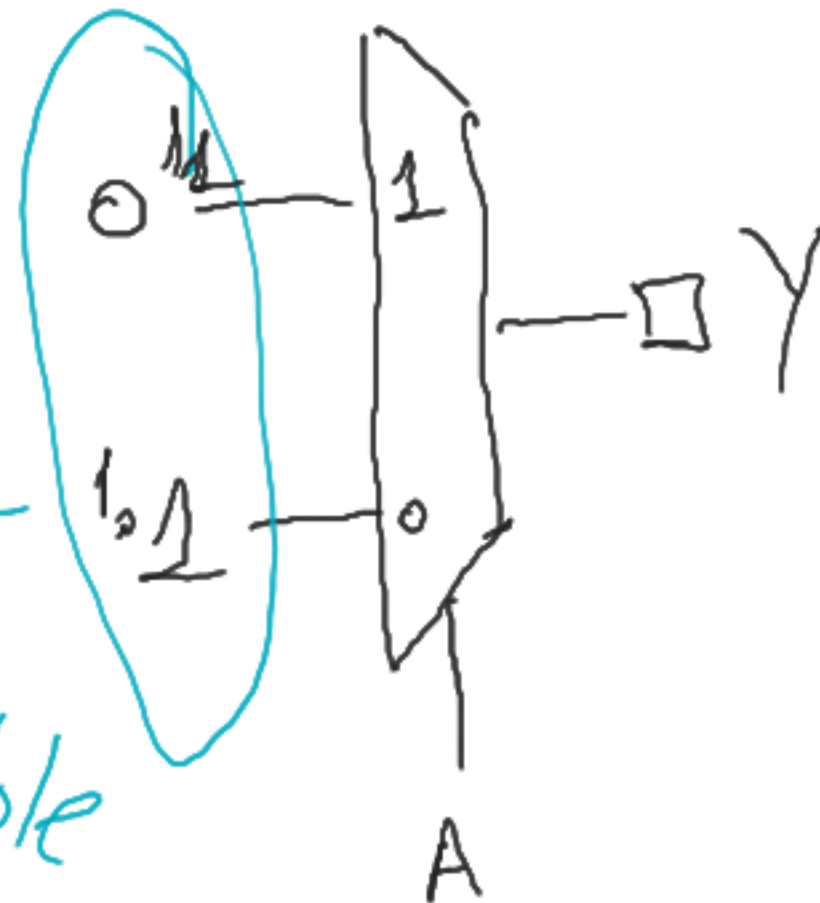
- Folosim bitii de selecție pt valorile de intrare
- Folosim un set de valori statice pt semnalele de intrare. (Tabelă de Look-up)

NOT



A	$\bar{A}$
0	1
1	0

LUT
Look Up Table

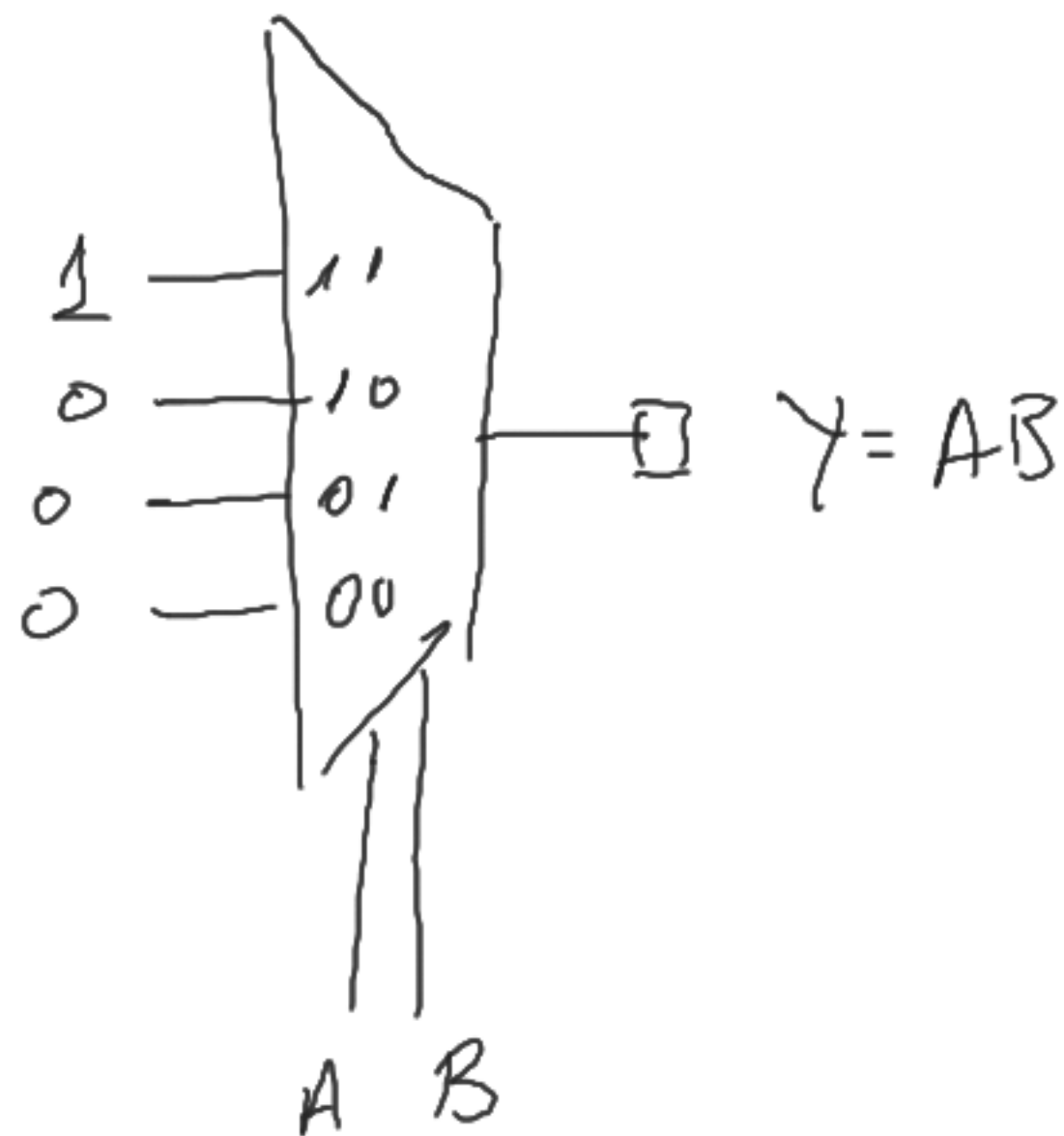


A	Y
0	$I_0 = 1$
1	$I_1 = 0$

AND

A	B	AB
0	0	0 = 1 ₀
0	1	0 = 1 ₁
1	0	0 = 1 ₂
1	1	1 = 1 ₃

1-LUT

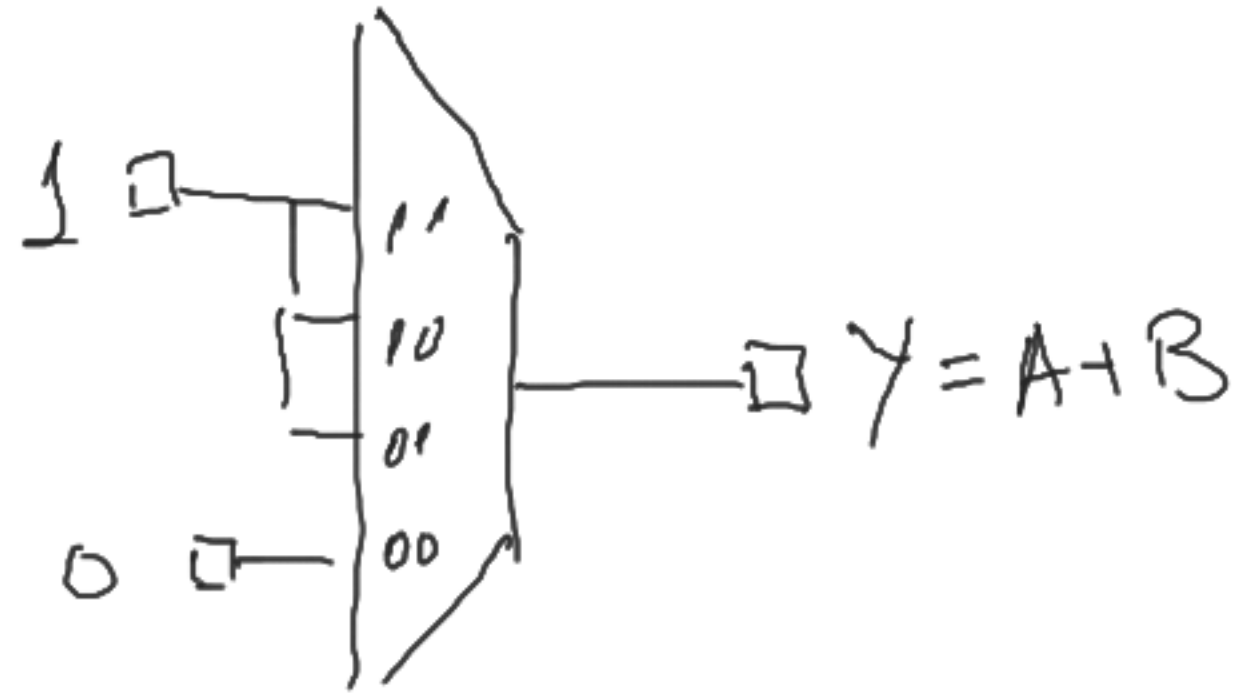
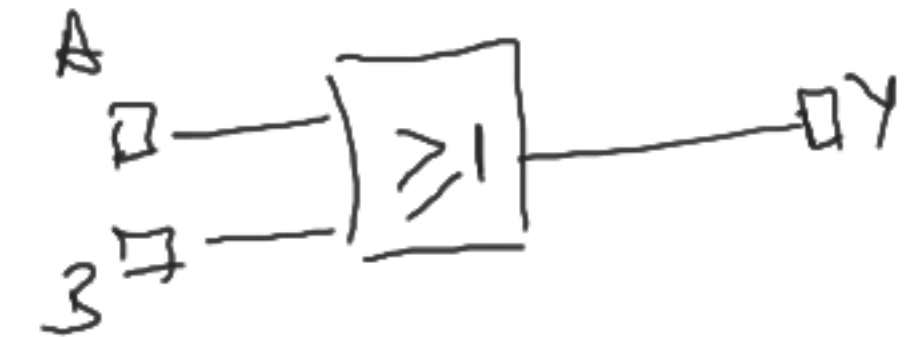


SAU (OR)

A	B	A+B
0	0	0 = 1 ₀
0	1	1 = 1 ₁
1	0	1 = 1 ₂
1	1	1 = 1 ₃

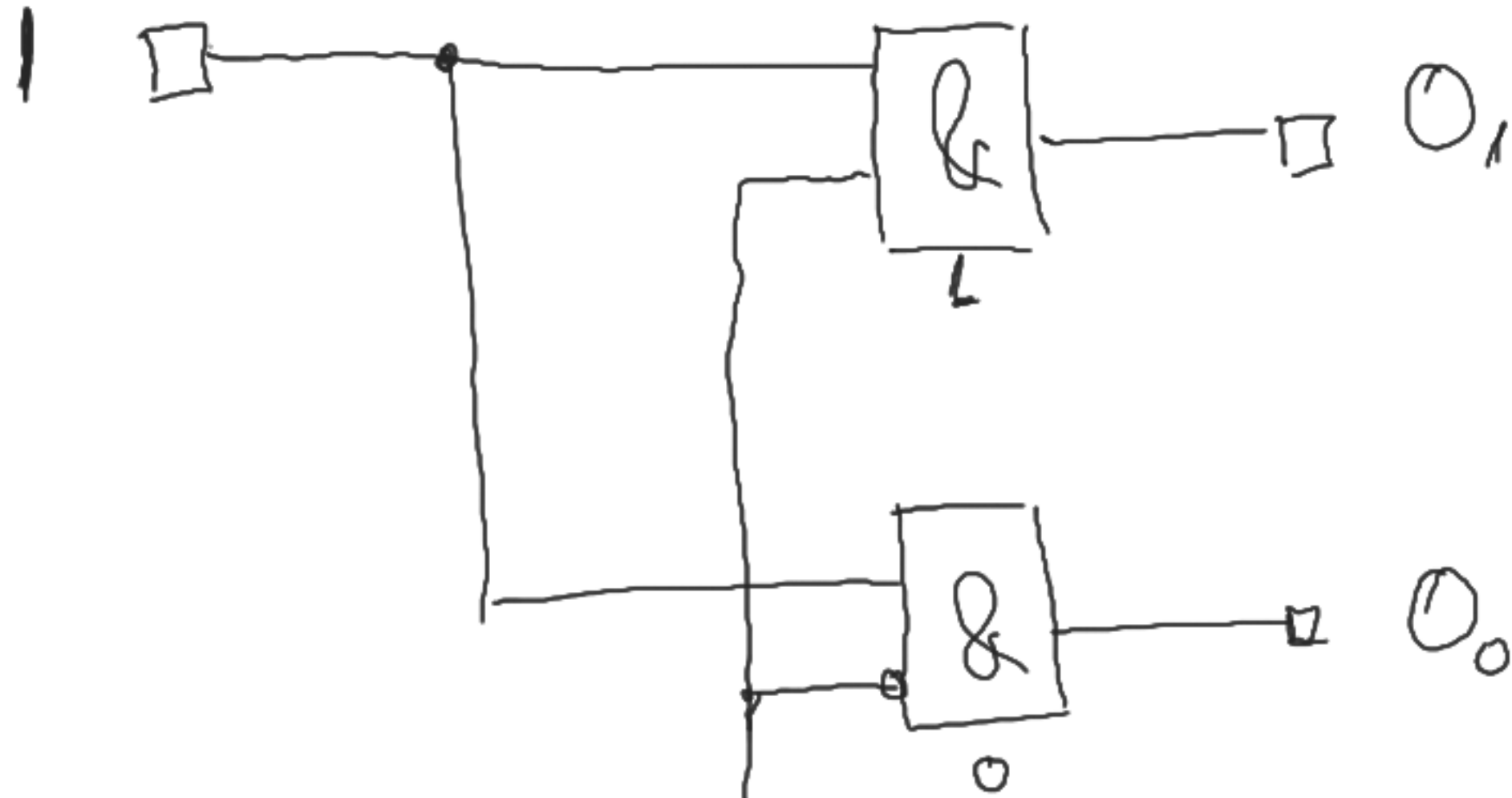
$$A+1 = 1$$

$$A+0 = A$$



LUT_S

Demux (2 bit)



S_0 - Bit de selectie
Bit de adresă

