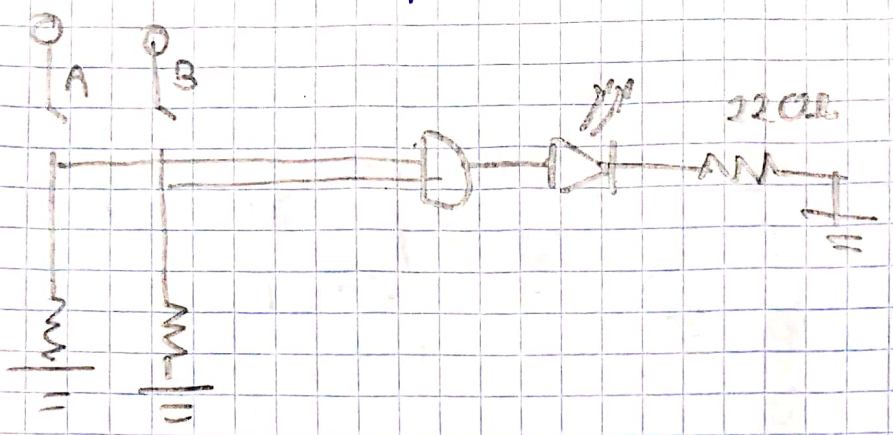
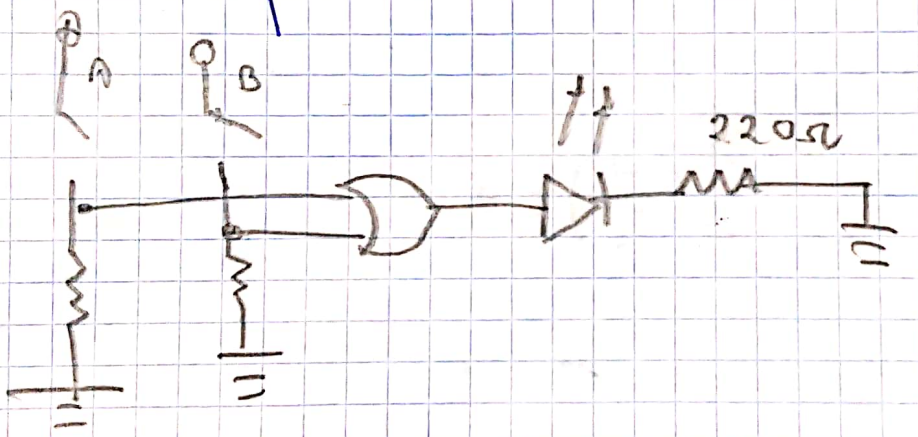
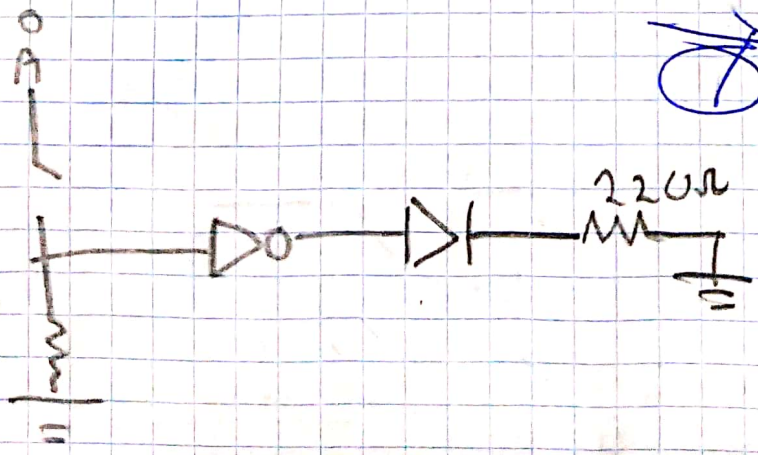
AND



OR



NOT



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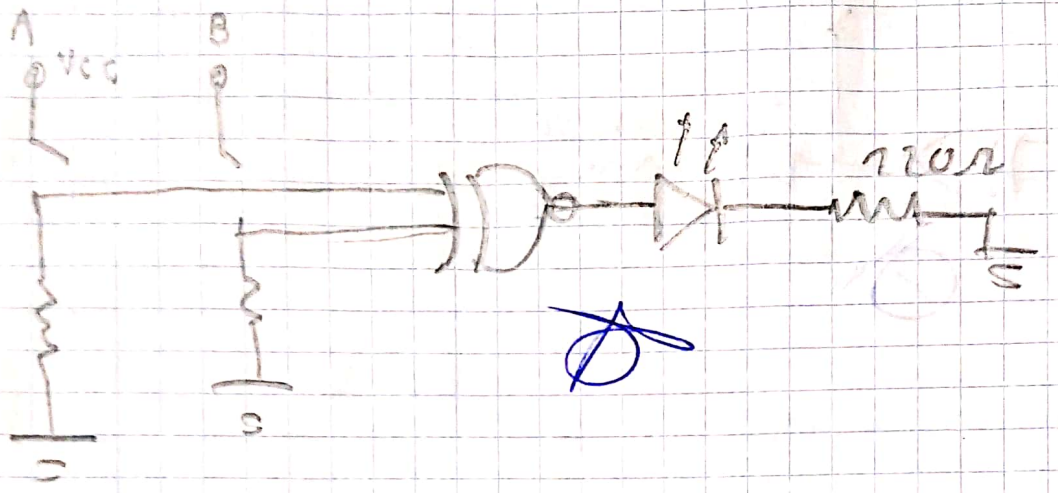
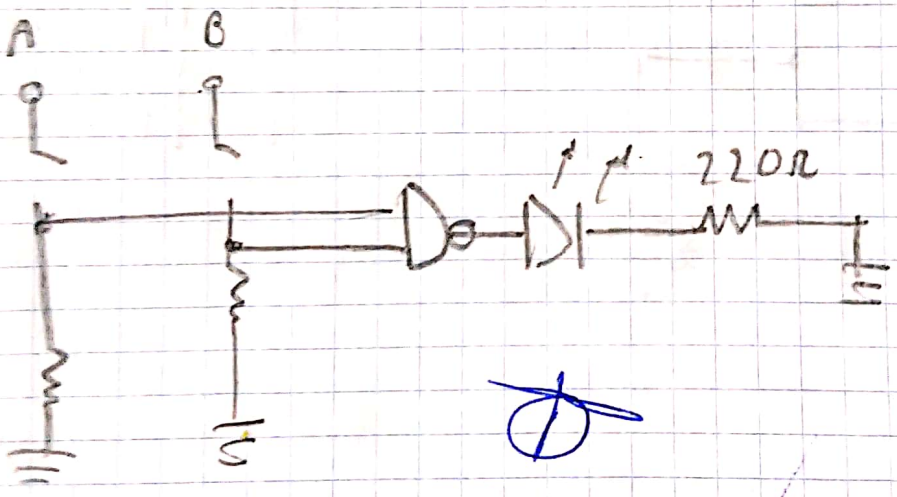
NOR NAND

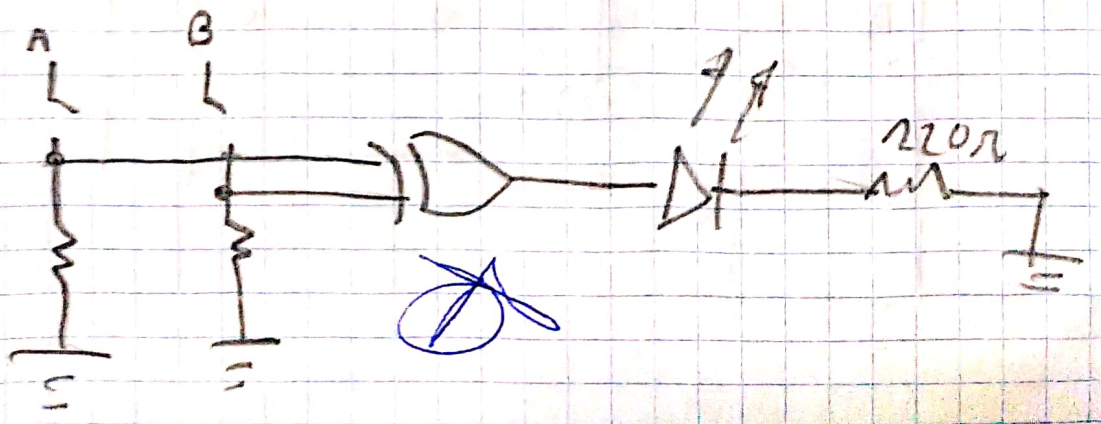
NOR



NAND

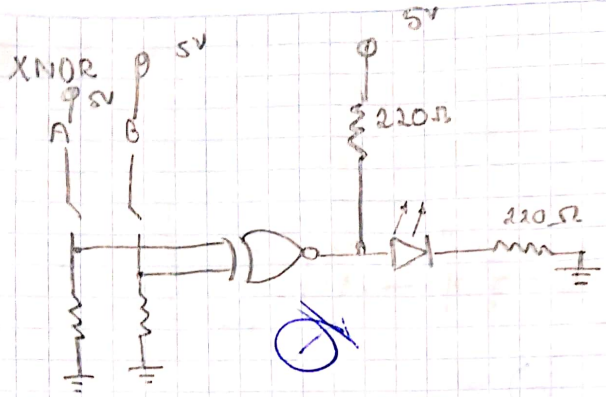


XOR



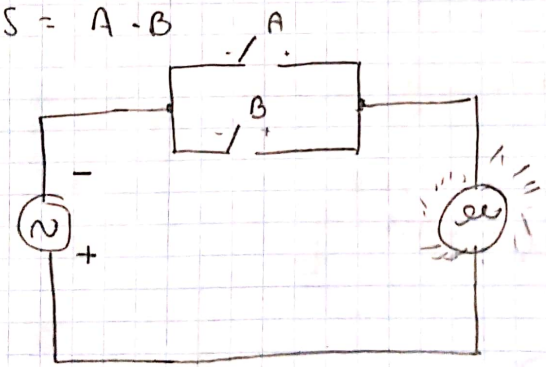
Scanned with CamScanner

XNOR



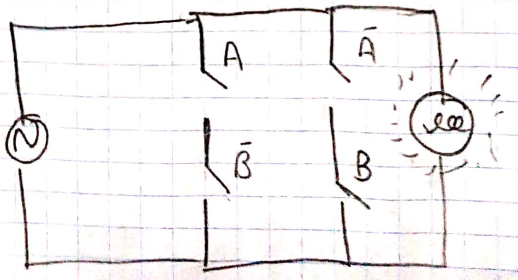
NAND

$S = \overline{A \cdot B}$



A	B	S
0	0	1
0	1	1
1	0	1
1	1	0

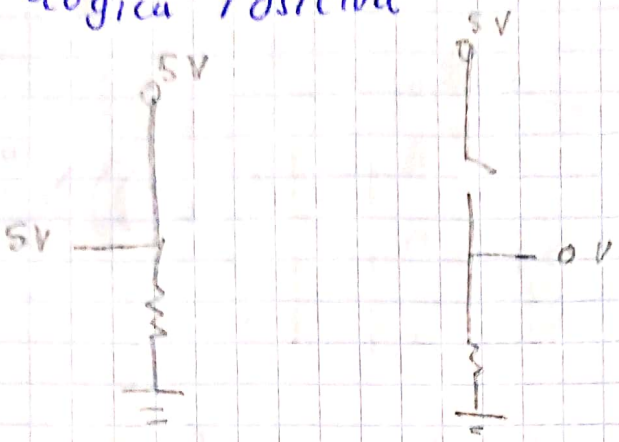
X NOR



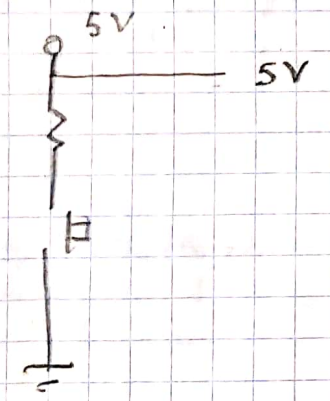
A	B	S
0	0	1
0	1	0
1	0	0
1	1	1

Scanned with CamScanner

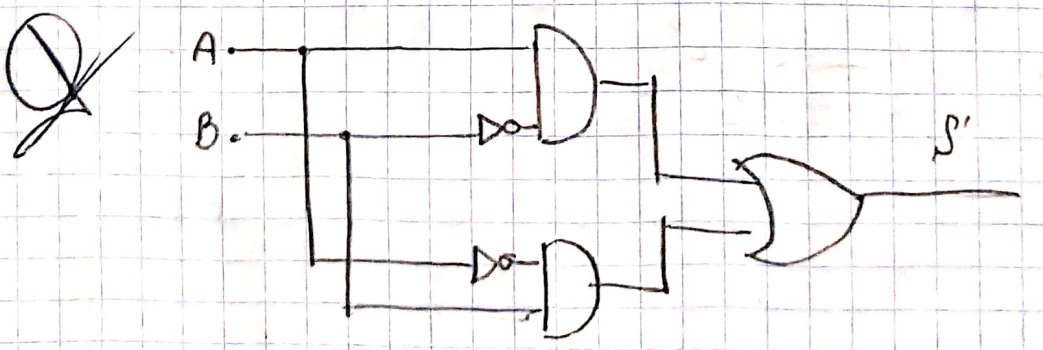
Lógica Positiva



Lógica Negativa



XOR = $A\bar{B} + \bar{A}B$

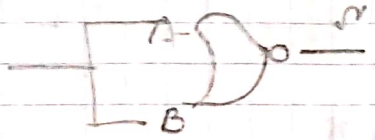


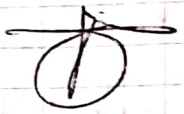
Scanned with CamScanner

NOR

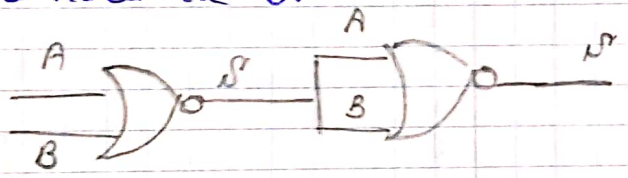
A	B	S
0	0	1
0	1	0
1	0	0
1	1	0

Para hacer la NOT



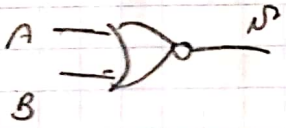


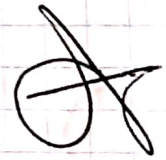
Para hacer la OR



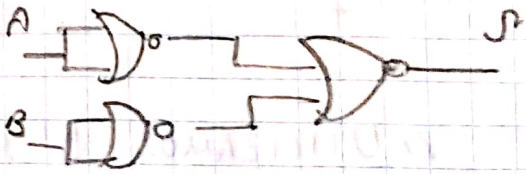
Para hacer la AND

$\overline{A+B}$ =





Por Teorema D' Morgan



$\overline{A+B} = \overline{A} \cdot \overline{B} =$

$\overline{A \cdot B} = \overline{A} + \overline{B}$

Comprobamos

AND

A	B	S
0	0	0
0	1	0
1	0	0
1	1	1

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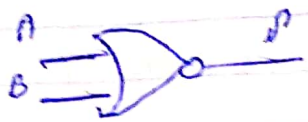
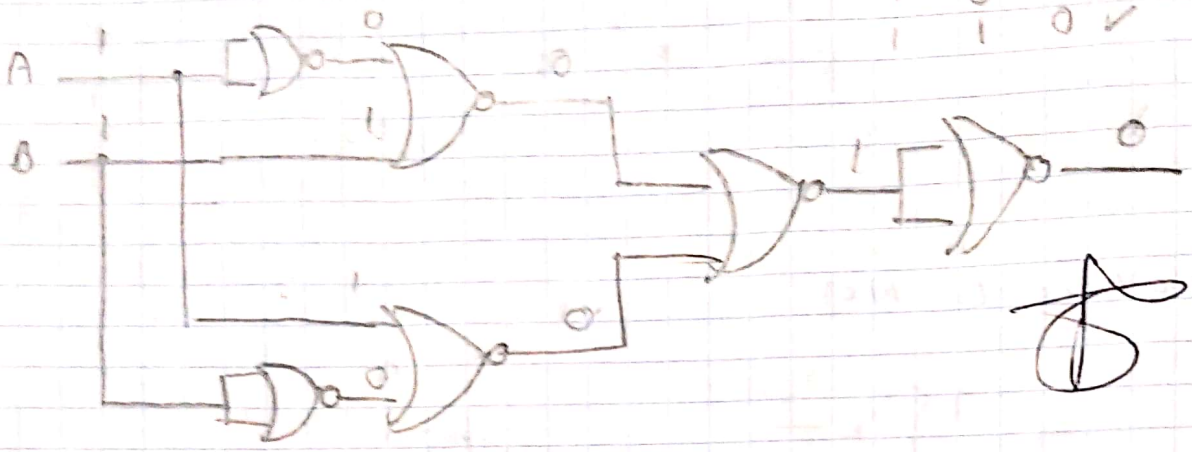


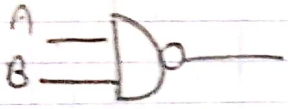
----> Es universal

XOR

A	B	S	
0	0	0	✓
0	1	1	✓
1	0	1	✓
1	1	0	✓

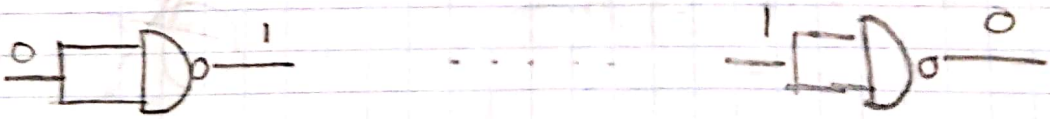


// Construcción de compuertas con la NAND



A	B	S
0	0	1
0	1	1
1	0	1
1	1	0

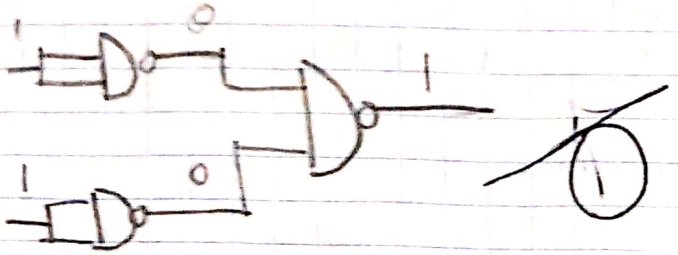
NOT



OR // UTILIZAMOS D' MORGAN

$\overline{A+B} = \bar{A} \cdot \bar{B}$

$\overline{A \cdot B} = \bar{A} + \bar{B}$

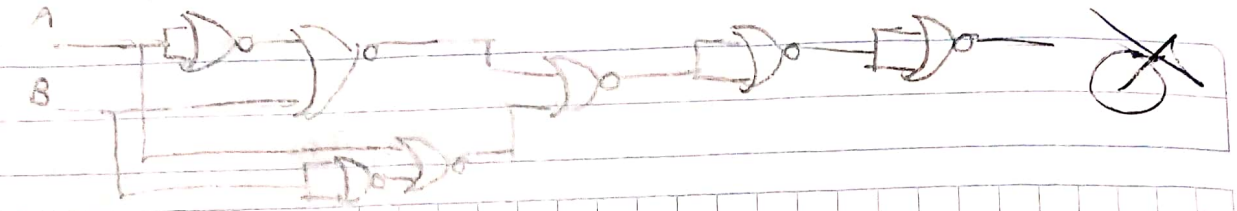


OR

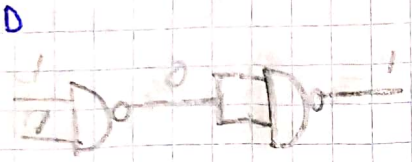
A	B	S	
0	0	0	✓
0	1	1	✓
1	0	1	✓
1	1	1	✓

Scanned with CamScanner

XNOR

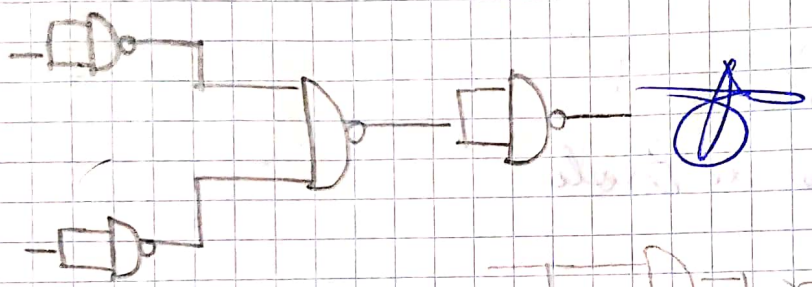


AND

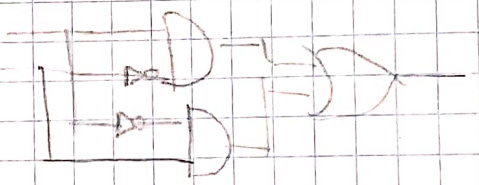


A	B	S	
0	0	0	✓
0	1	0	✓
1	0	0	✓
1	1	1	✓

NOR

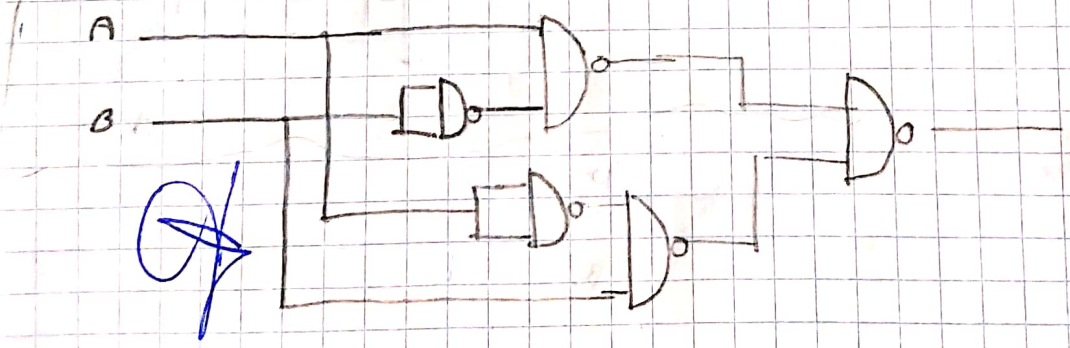


A	B	S	
0	0	1	✓
0	1	0	✓
1	0	0	✓
1	1	0	✓



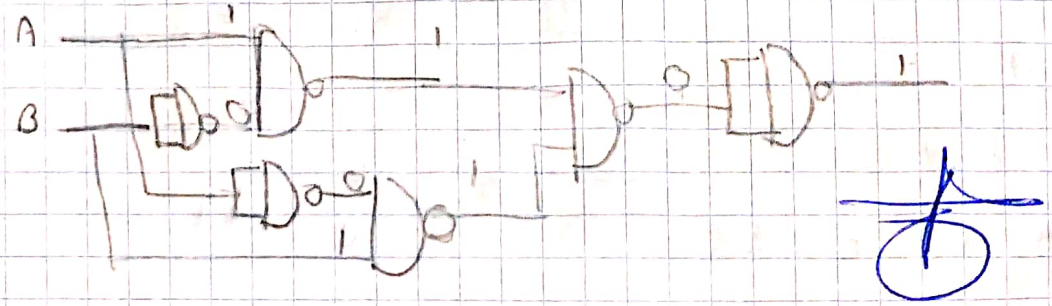
XOR

$A\bar{B} + \bar{A}B$



A	B	S
0	0	0
0	1	1
1	0	1
1	1	0

XNOR



A	B	S	
0	0	1	✓
0	1	0	✓
1	0	0	✓
1	1	1	✓

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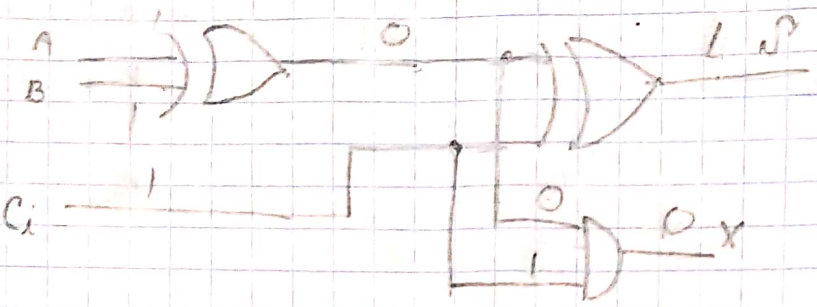
* Hacer con NOR y NAND



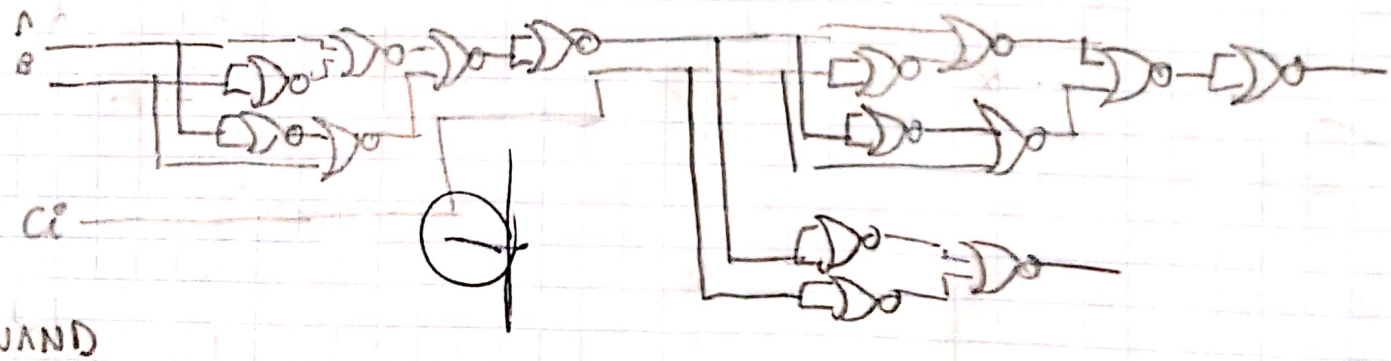
A	B	S
0	0	0
0	1	1
1	0	1
1	1	0

A	B	S
0	0	0
0	1	0
1	0	0
1	1	1

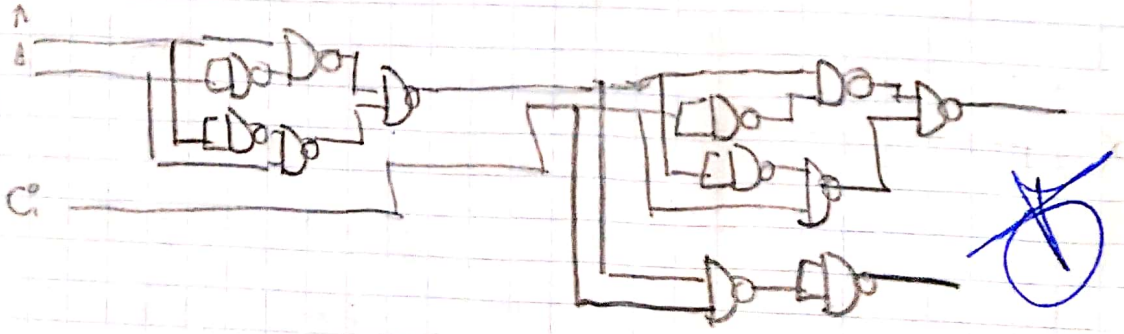
Ci	B	A	Si	X
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	0
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	0

$\bar{A}B + A\bar{B}$

NOR



NAND



Scanned with CamScanner

$\bar{A}B + A\bar{B} + AB = A\bar{B} + \bar{A}B + AB$

$\bar{A}(B + B) + A(\bar{B} + B)$

$\bar{A} + A = 1$

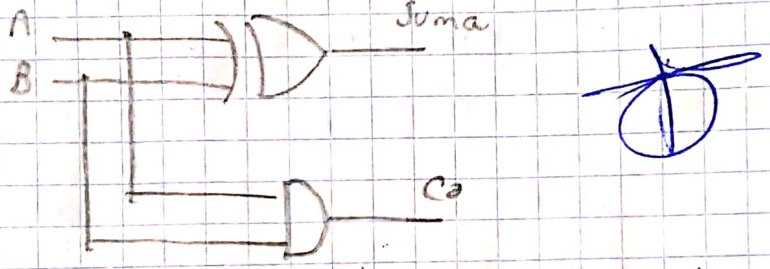
Sumar

A	B	Suma Σ	Acarreo de Salida C_o
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

} XOR

← AND

Medio Sumador



$0 + 0 = 0$

$0 + 1 = 1$

$1 + 0 = 1$

$1 + 1 = 0$, $C_o = 1$

A	B	Resta	Préstamo β
0	0	0	0
0	1	1	1
1	0	1	0
1	1	0	0

XOR

← NOT

$0 - 0 = 0$, $\beta = 0$

$0 - 1 = 1$, $\beta = 1$

$1 - 0 = 1$, $\beta = 0$

$1 - 1 = 0$, $\beta = 0$

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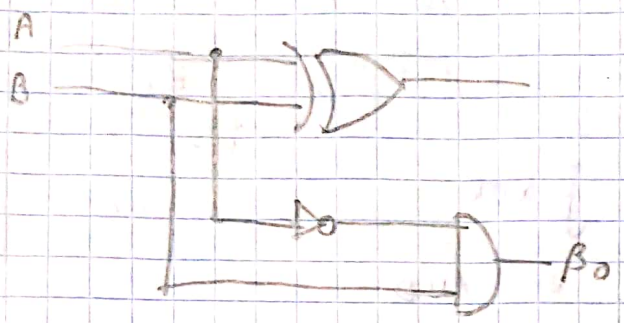
Medio Restador



Hacer el medio sumador y el medio restador con NAND y NOR

* NOR

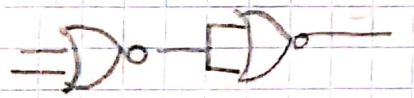
OR

A	B	S
0	0	0
0	1	1
1	0	1
1	1	1

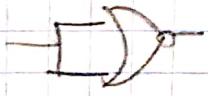
NOR

A	B	S
0	0	1
0	1	0
1	0	0
1	1	0

OR



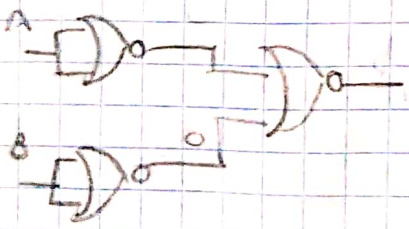
NOT



AND

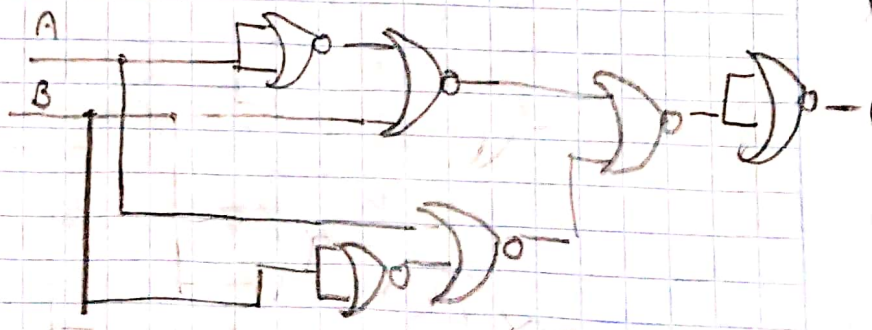
A	B	S
0	0	0
0	1	0
1	0	0
1	1	1

AND



∴

XOR $\bar{A}B + A\bar{B}$



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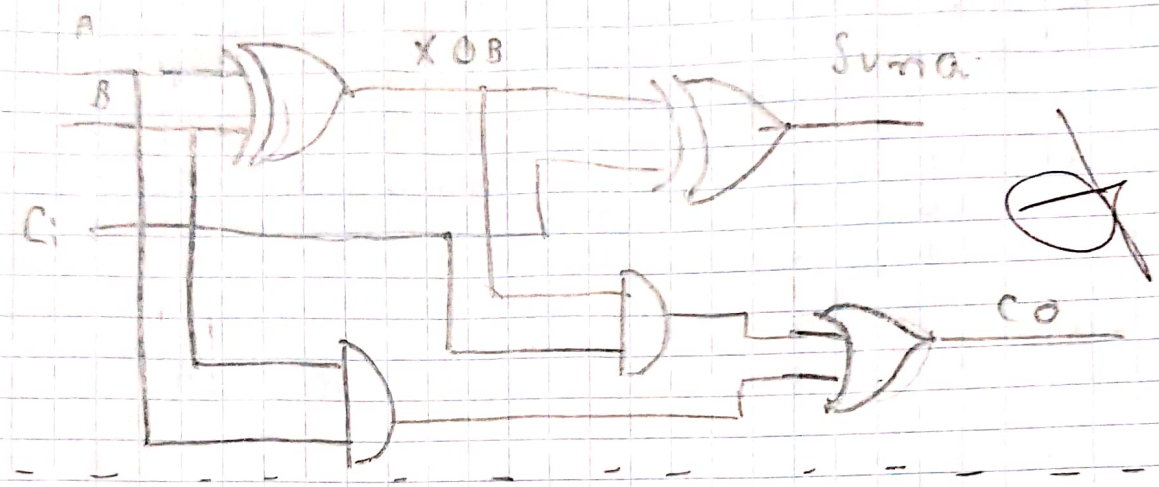
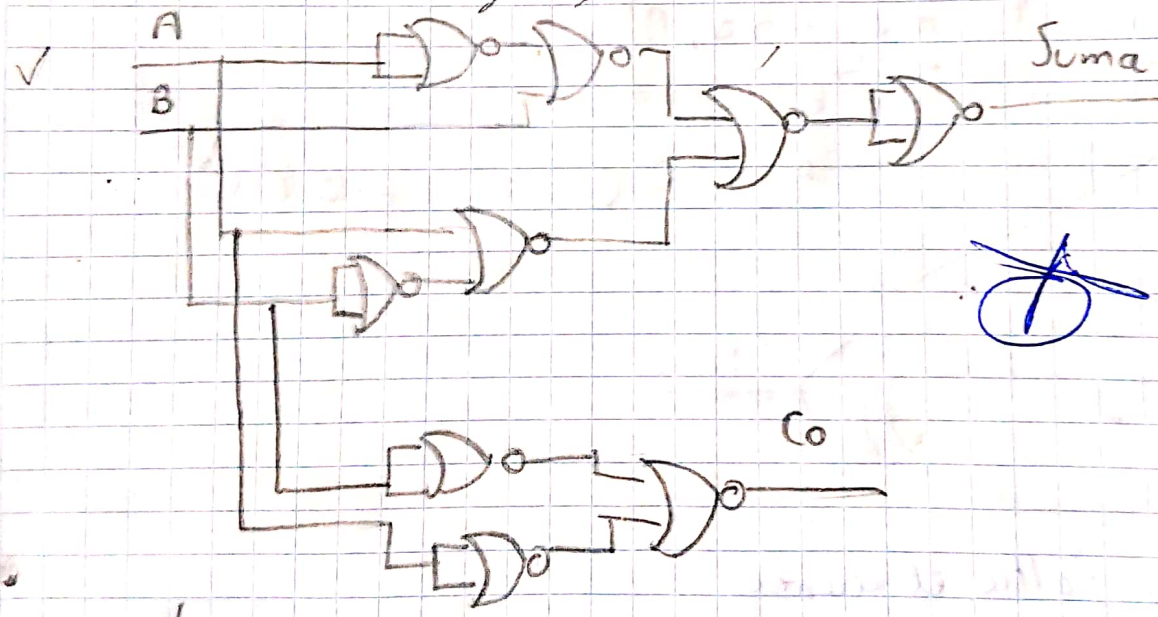
Sumador Completo con acarreo



Medio Sumador con NOR



0 0 0
0 1 1
1 0 2
1 1 3

1
1 1
1
11

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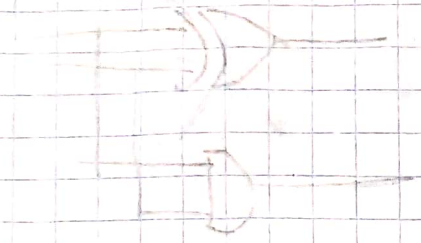
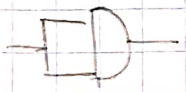
Hacer ejercicios de Algebra de Boole

Medio Sumador con NAND

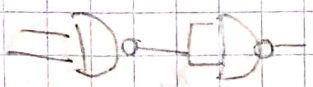
A	B	S
0	0	1
0	1	1
1	0	1
1	1	0



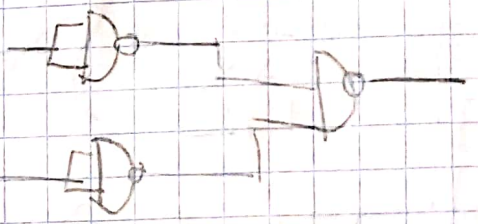
NOT



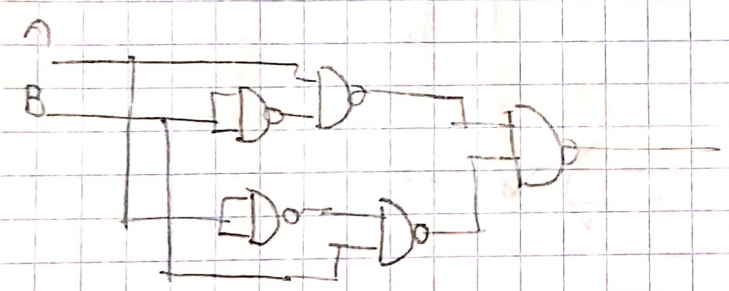
AND

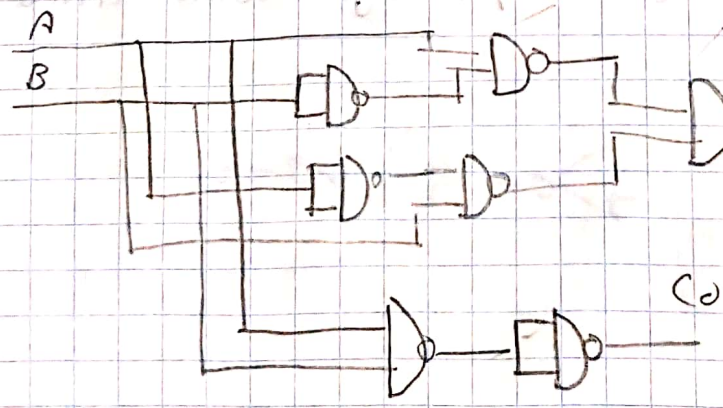


OR



$A\bar{B} + \bar{A}B$

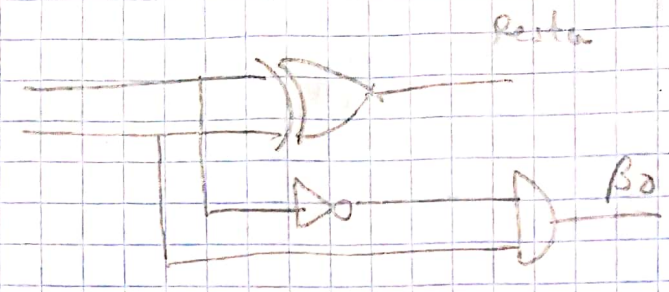


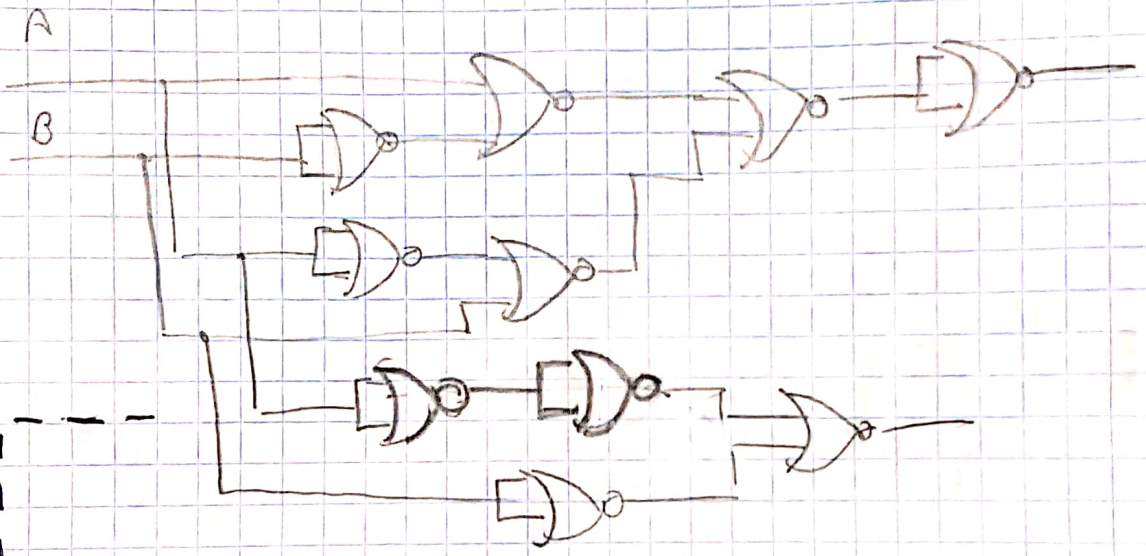


Medio Sumador con NAND

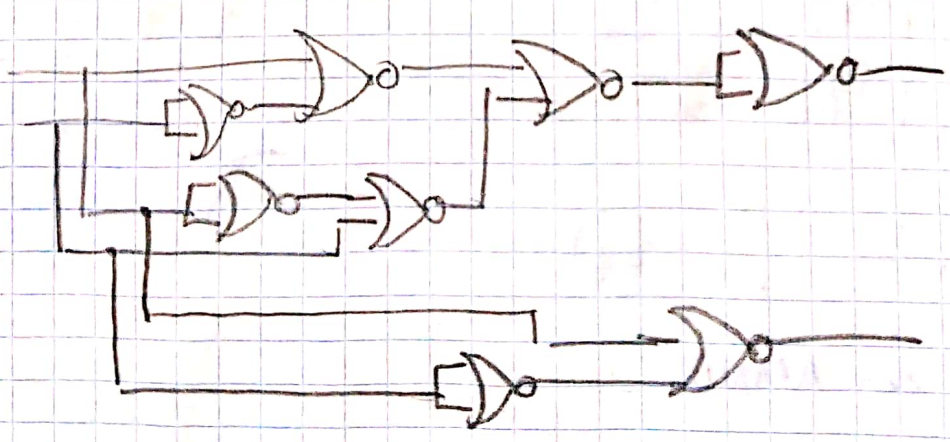
Scanned with CamScanner

Medio Restador con NOR

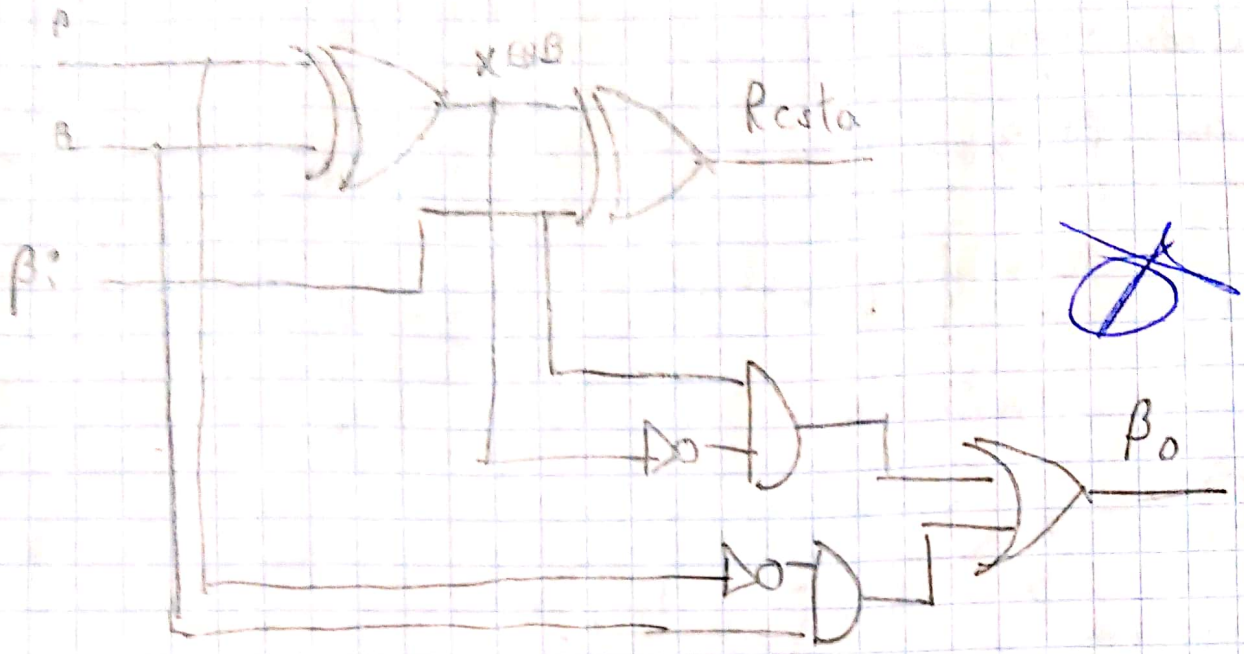




Cuando hay 2 NOTS se cancelan y se deja como línea. ~~base~~

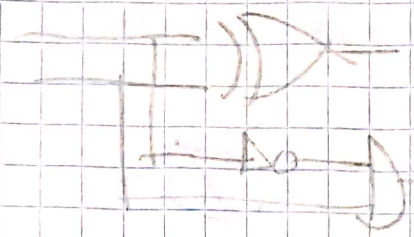


Scanned with CamScanner

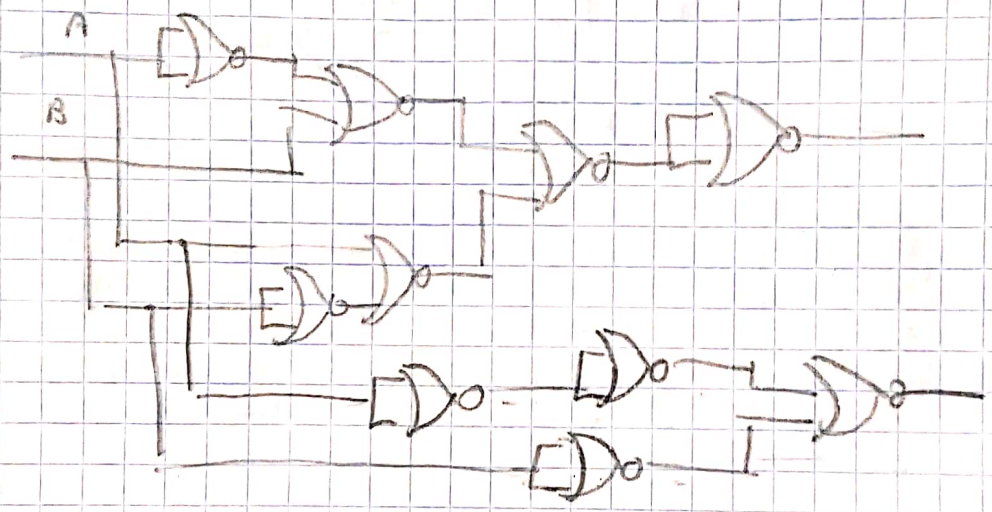


Scanned with CamScanner

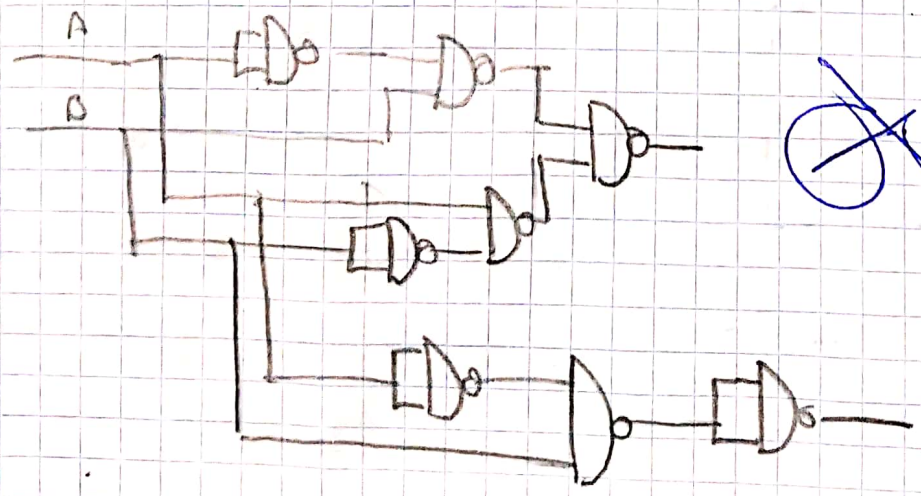
Medio restador con NOR



$A\bar{B} + \bar{A}B$



Medio Restador con NAND



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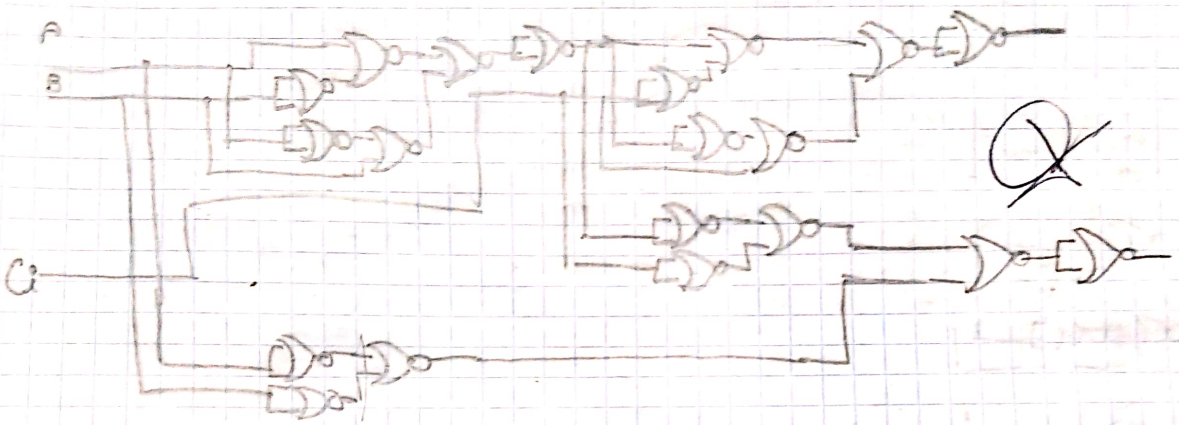
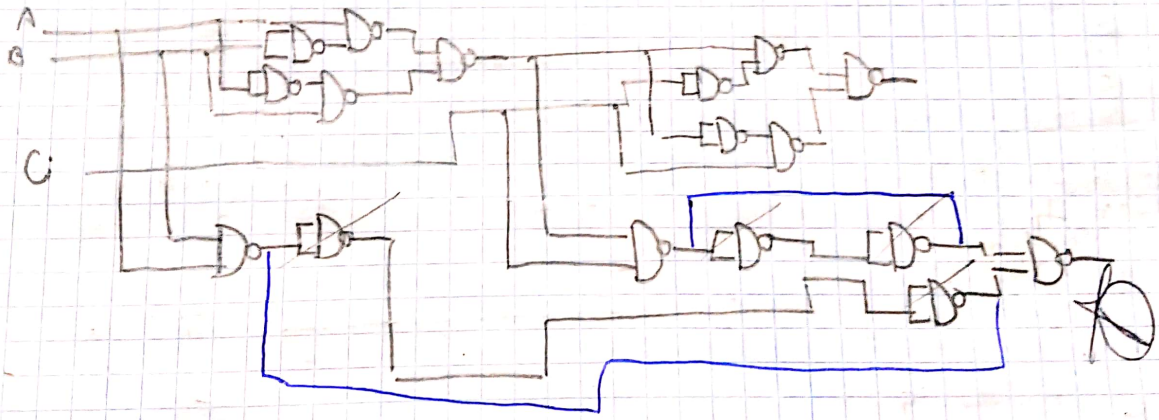
Sumador completo con NOR



Sumador completo con NAND



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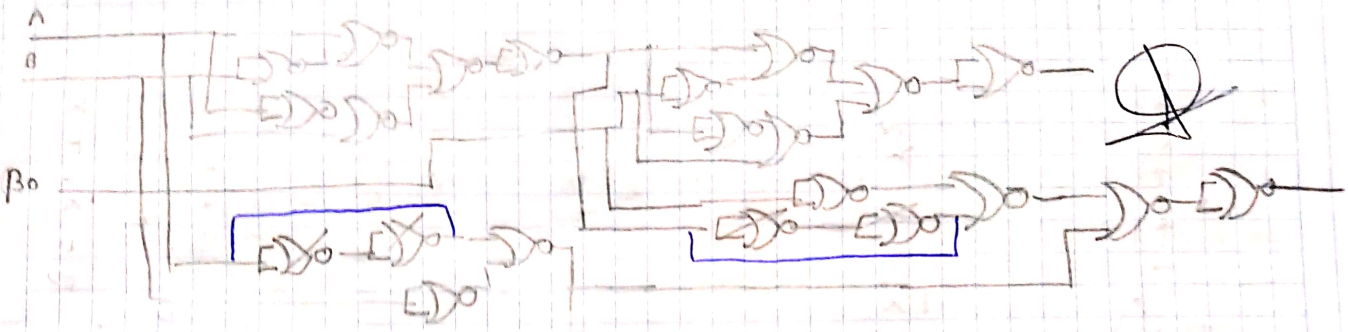
Restador Completo Co. NOR

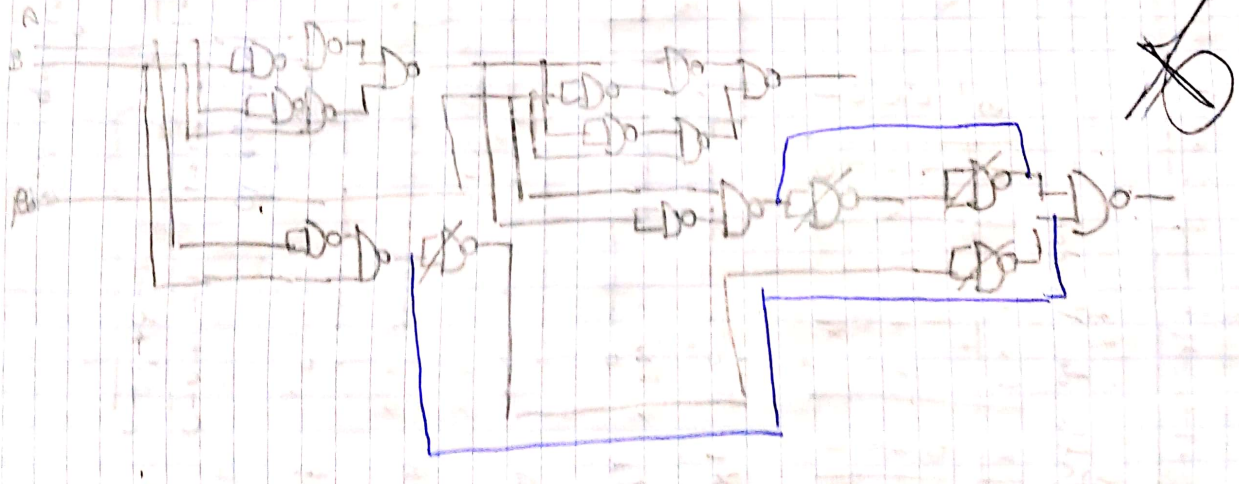
* cable

5 C.I



Restador Completo con NAND

4 C.I



reporte

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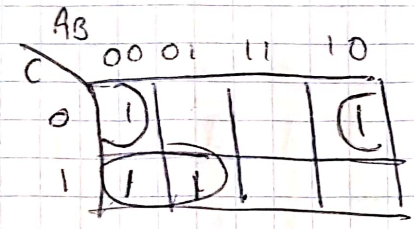
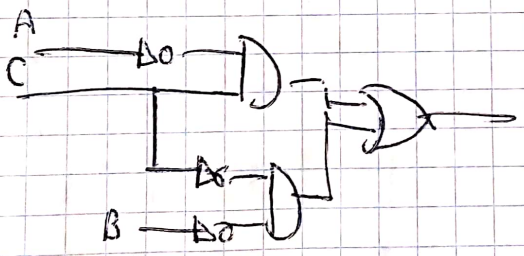
1	1	0	1	$\bar{A}BC$	$A + B + C$
1	1	1	0	ABC	$\bar{A} + \bar{B} + \bar{C}$

$f(A,B,C) = \bar{A}\bar{B}\bar{C} + A\bar{B}\bar{C} + \bar{A}BC + \bar{A}BC$ --> Minterms

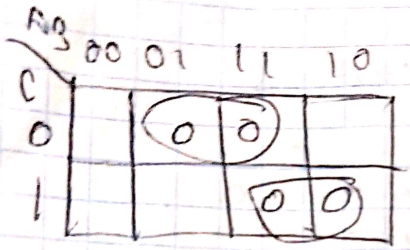


$f(A,B,C) = \bar{B}\bar{C} + \bar{A}C$

Minterms



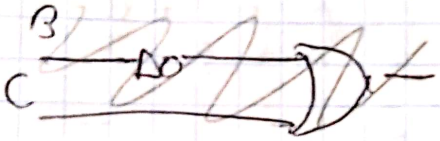
Scanned with CamScanner

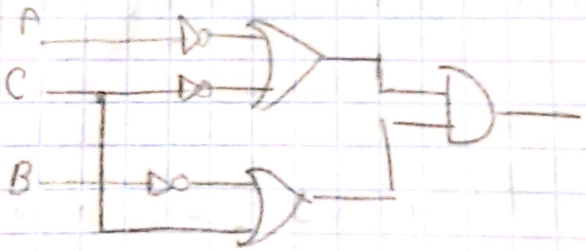


$$f(A,B,C) = B\bar{C} + AC$$

$$= B\bar{C} + AC$$

$$= (\bar{B} + C)(\bar{A} + \bar{C})$$





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D	C	B	A	f(A,B,C,D)
0	0	0	0	1
0	0	0	1	0
0	0	1	0	0
0	0	1	1	1
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	1
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	1
1	1	0	0	0
1	1	0	1	1
1	1	1	0	0
1	1	1	1	1

Minterms

$\bar{A}\bar{B}\bar{C}\bar{D}$

$A\bar{B}\bar{C}\bar{D}$

$\bar{A}B\bar{C}\bar{D}$

$A\bar{B}C\bar{D}$

$AB\bar{C}\bar{D}$

$A\bar{B}\bar{C}D$

$AB\bar{C}D$

$A\bar{B}CD$

$ABC\bar{D}$

Maxterms

$\bar{A}+B+C+D$

$A+\bar{B}+C+D$

$A+B+\bar{C}+D$

$\bar{A}+B+C+\bar{D}$

$A+\bar{B}+C+\bar{D}$

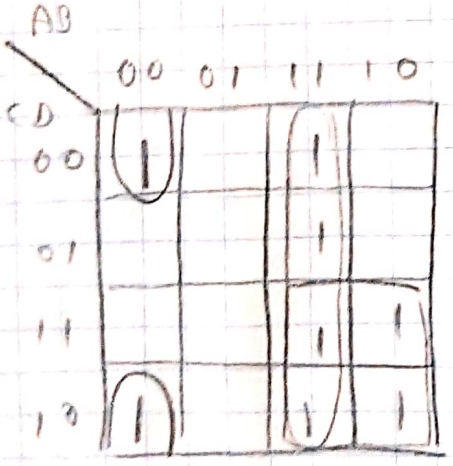
$A+B+\bar{C}+\bar{D}$

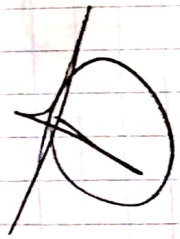
$\bar{A}+\bar{B}+C+\bar{D}$

$\bar{A}+B+\bar{C}+\bar{D}$

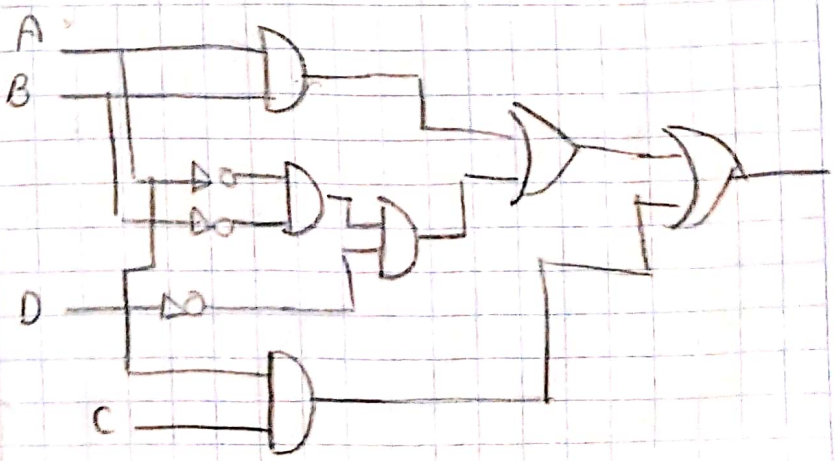
$A+\bar{B}+\bar{C}+\bar{D}$

$f(A,B,C,D) = \bar{A}\bar{B}\bar{C}\bar{D} + AB\bar{C}\bar{D} + \bar{A}\bar{B}C\bar{D} + A\bar{B}C\bar{D} + ABC\bar{D} + AB\bar{C}D + A\bar{B}CD + ABCD$





$f(A,B,C,D) = AB + \bar{A}\bar{B}\bar{D} + AC$



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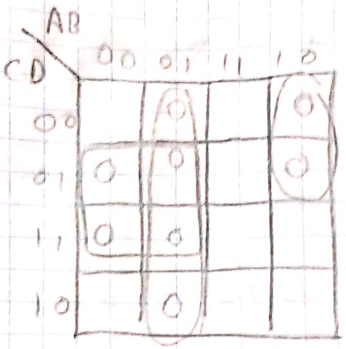
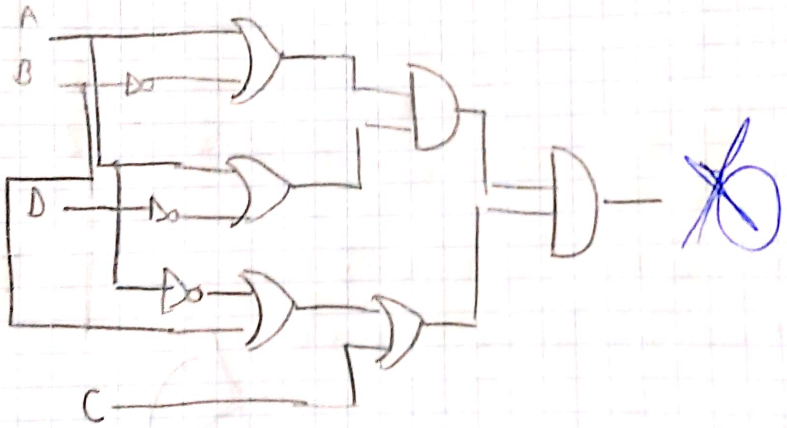


$\bar{f} = (A + \bar{B})(A + \bar{D})(\bar{A} + B + C)$



Propones 1 nosotros

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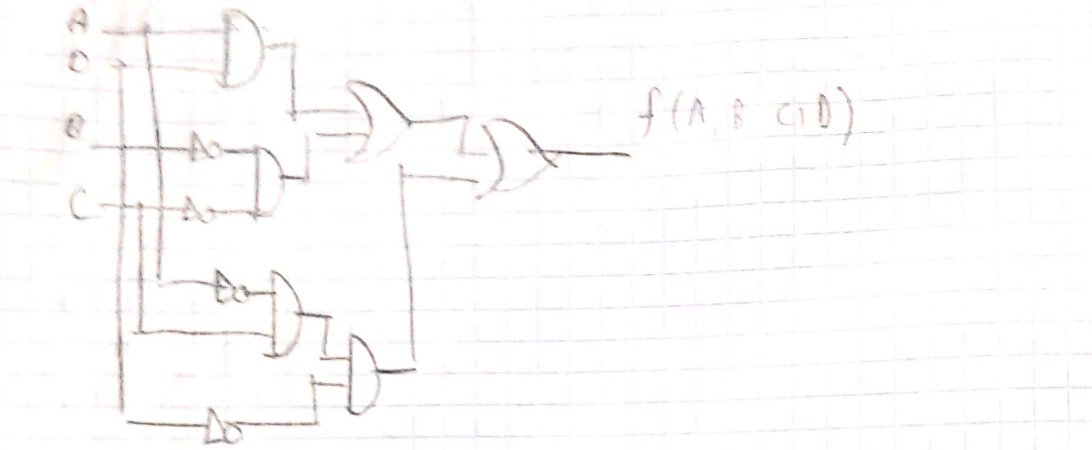

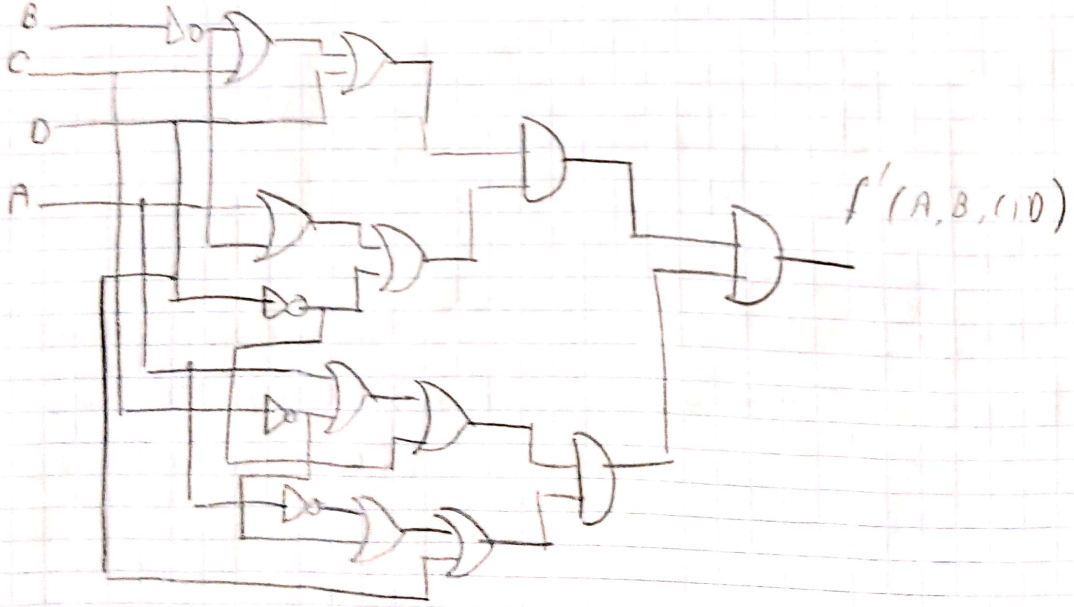

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