SUMADOR DE 4 BITS USANDO COMPUERTAS LOGICAS NAND

Hinara Pastora Sanchez, Juan Jose Ospina, Sebastian Aguinaga y Luzarait Cañas Quintero

ENTER

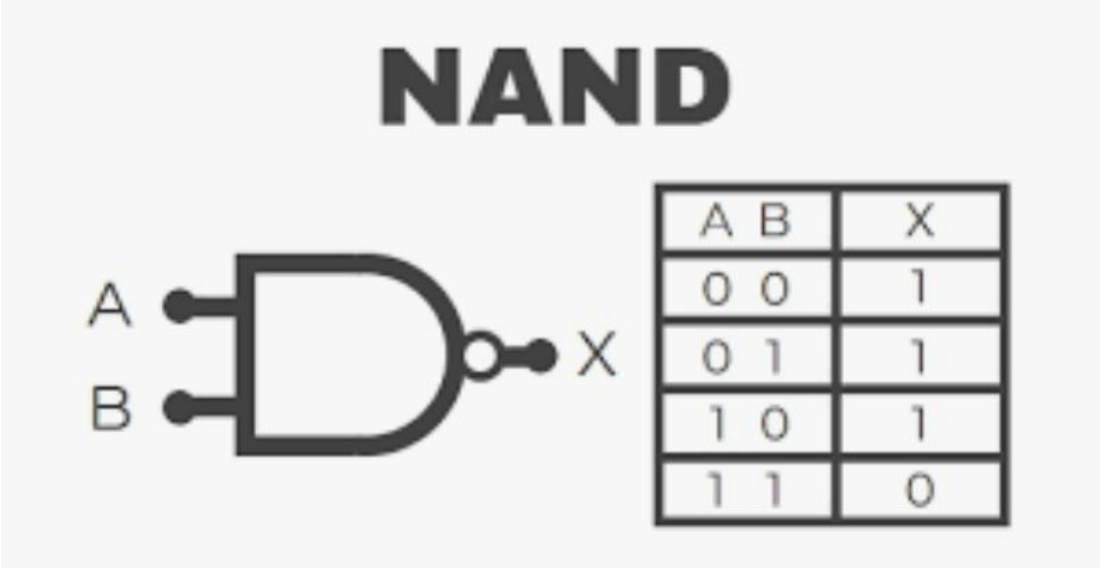
SUMA EN BINARIO

A	B	SUMA	ACARREO
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

TABLA DE VERDAD

ENTRADA			SALIDA	
A	B	C-in	SUMA	C-out
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

COMPUERTA NAND



SUMADOR INCOMPLETO (HALF ADDER)

A	B	SUMA	ACARREO
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

A \ B	0	1
0	0	1
1	1	0

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

A \ B	0	1
0	0	0
1	0	1

$Ac = AB$

01 02 03 04

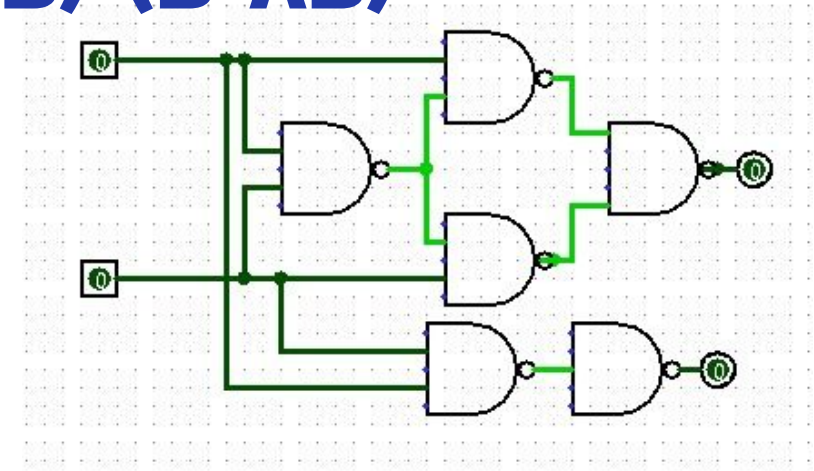
SUMADOR INCOMPLETO (HALF ADDER)

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

$$= \overline{(A \cdot \overline{AB}) \cdot (B \cdot \overline{AB})}$$

$$Ac = AB$$

$$= \overline{\overline{AB}}$$



01

02

03

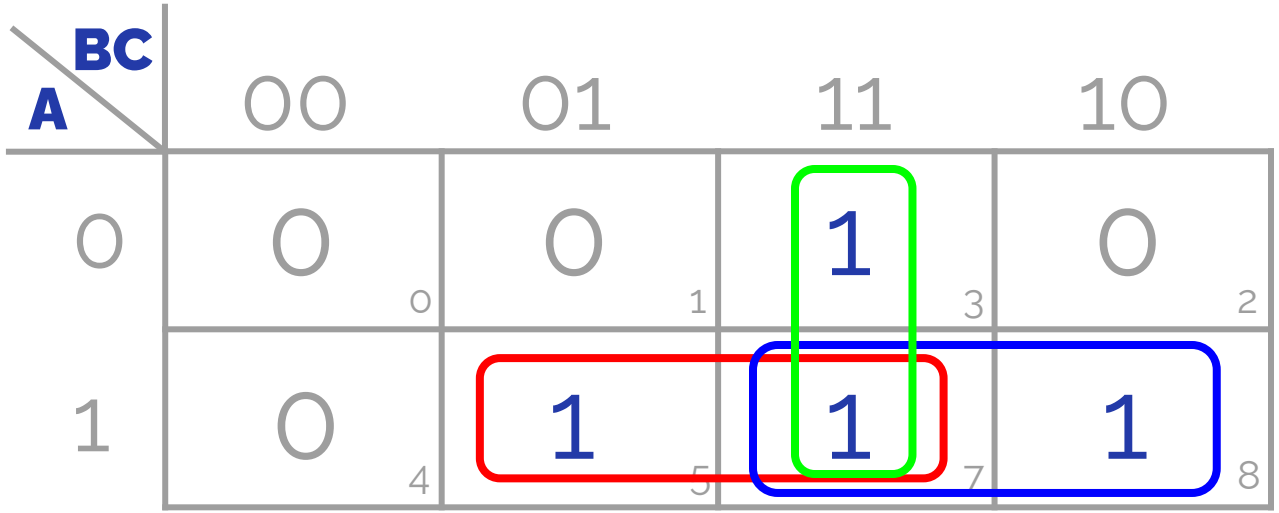
04

MAPA DE KARNAUGH PARA LA SUMA

A \ BC	00	01	11	10
0	0 (0)	1 (1)	0 (3)	1 (2)
1	1 (4)	0 (5)	1 (7)	0 (8)

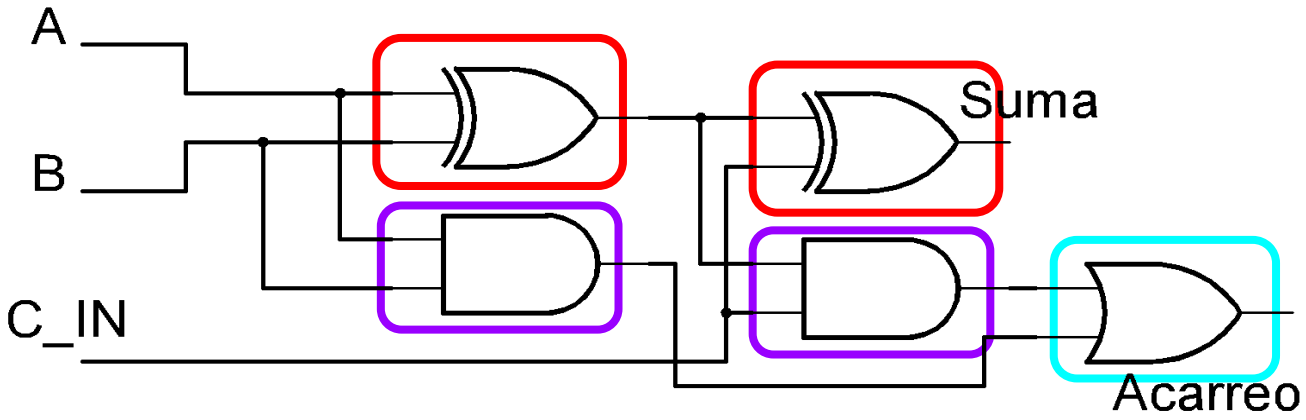
$$S = A\bar{B}\bar{C} + \bar{A}\bar{B}C + ABC + \bar{A}B\bar{C} = (A \oplus B) \oplus C$$

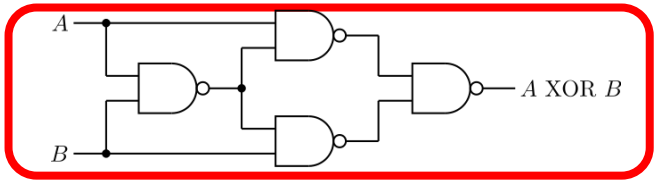
MAPA DE KARNAUGH PARA EL ACARREO

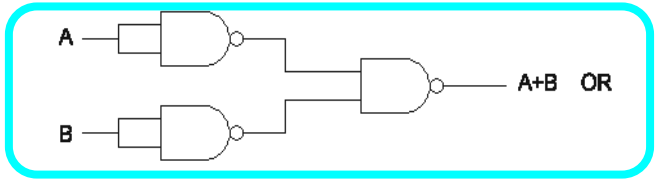


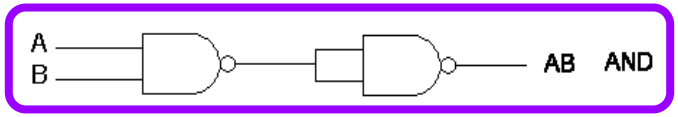
$$Ac = AC + AB + BC = AB + C(A \oplus B)$$

SUMADOR COMPLETO (FULL ADDER)









01

02

03

04

MUCHAS GRACIAS