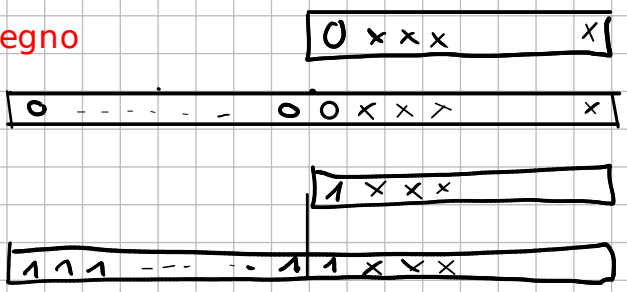
estensione del segno



LOGICA BOOLEANA

AND — congiunzione — 2 ingressi (n)

OR — disgiunzione — 2 ingressi (n)

NOT — negazione — 1 ingresso

TABELLE VERITÀ

ingressi (conf. ingressi)	uscita (conf. delle uscite)

AND (n)

x	y	z
0	0	0
0	1	0
1	0	0
1	1	1

2^n

OR

x	y	z
0	0	0
0	1	1
1	0	1
1	1	1

x	z
0	1
1	0

f : 4bit → #"1"

a	b	c	d	z_1	z_2	z_3
0	0	0	0	0	0	0
→ 0	0	0	1	0	0	1
→ 0	0	1	0	0	0	1
0	0	1	1	0	1	0
→ 0	1	0	0	0	0	1
→ 0	1	0	1	0	1	0
→ 0	1	1	0	0	1	0
0	1	1	1	0	1	1
⋮						
1	1	1	1	1	0	0

f[16]

f[0] = 0

f[1] = 1

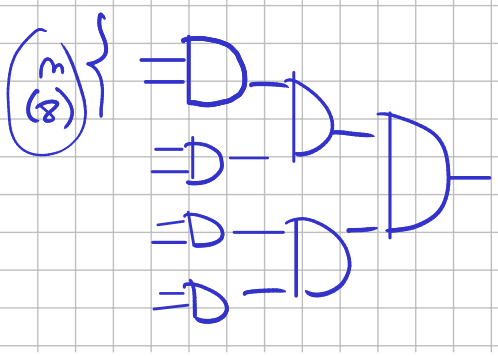
f[2] = 1

f[3] = 2

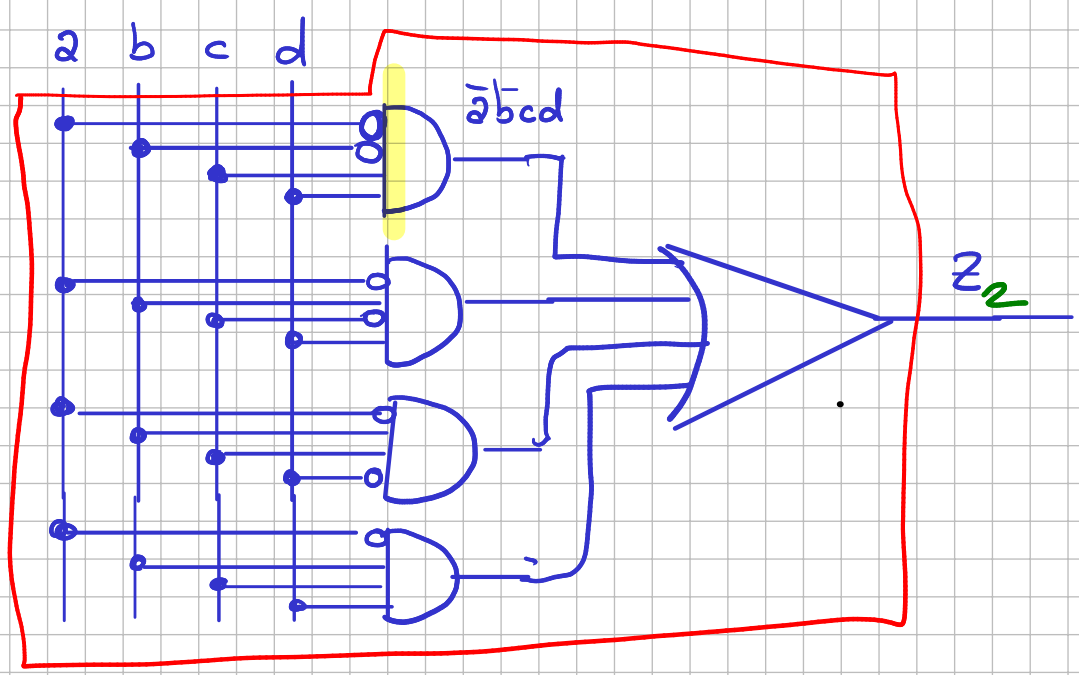
$z_1 = a \text{ AND } b \text{ AND } c \text{ AND } d$

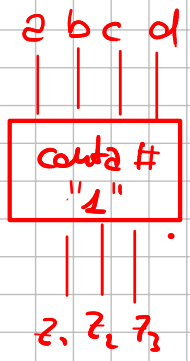
$z_2 = \bar{a}\bar{b}cd + \bar{a}b\bar{c}d + \bar{a}bc\bar{d} + \bar{a}bcd +$

(n=8)



$z_2 = \bar{a}\bar{b}cd + \bar{a}b\bar{c}d + \bar{a}bc\bar{d} + \bar{a}bcd +$





g : n° de 4 bit, n° de 4 bit → Somma

$x_1 x_2 x_3 x_4$ $y_1 y_2 y_3 y_4$	c	$z_1 z_2 z_3 z_4$
	0	
	1	
	0	
	1	
	1	
	:	
	1	

256 righe

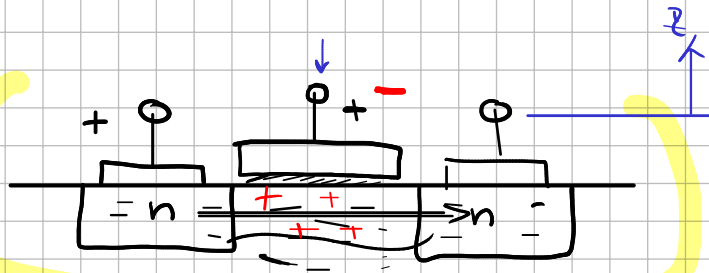
$z_1 =$

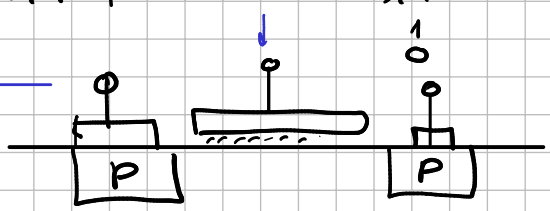
a b	z
00	0 ←
01	1
10	1
11	1

$z = \bar{a}b + a\bar{b} + ab$

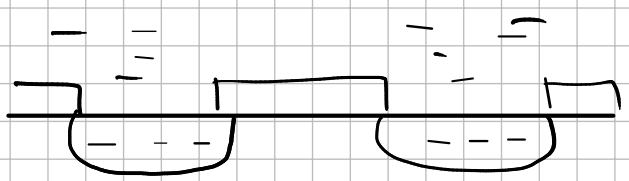
$z = \overline{\bar{a}\bar{b}}$

00
11
1
0

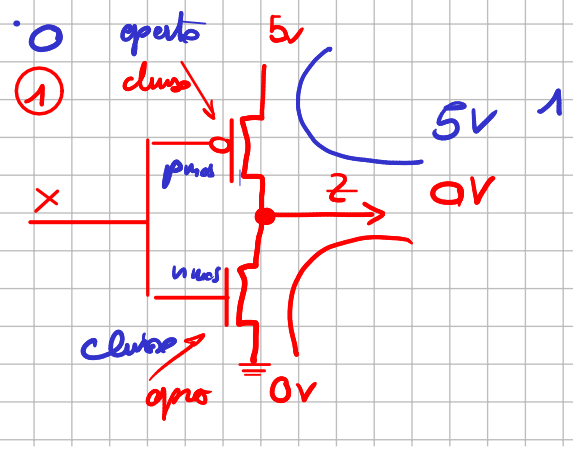




transistor n mos

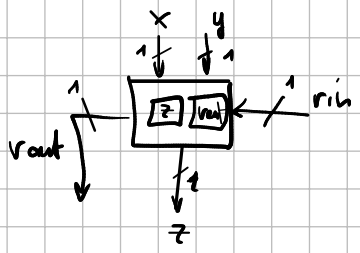


p-mos



Sommatore

x	y	rin	z	rout
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



$$z = \bar{x}\bar{y}\,rin + \bar{x}\,y\,\overline{rin} + x\,\bar{y}\,\overline{rin} + x\,y\,rin$$

$$rout = \bar{x}\,y\,rin + x\,\bar{y}\,rin + x\,y\,\overline{rin} + x\,y\,rin$$

arbitro 4 richieste 1 ack

r_1	r_2	r_3	r_4	a_1	a_2	a_3	a_4
1	–	–	–	1	0	0	0
0	1	–	–	0	1	0	0
0	0	1	–	0	0	1	0
0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0

Ab. rischio

$$a_1 = r_1$$

$$a_2 = \bar{r}_1\,r_2$$

$$a_3 = \bar{r}_1\,\bar{r}_2\,r_3$$

$$a_4 = \bar{r}_1\,\bar{r}_2\,\bar{r}_3\,r_4$$

	Valido valore	
———	1	~~0~~ 1
———	1	1
———	0	– (1, 0)

Valore =

Algebra booleana $\{0,1\}$ AND $\cdot$ OR $+$ NOT $\overline{\times}$

identità

$B \cdot 1 = B$
$B + 0 = B$
$B \cdot B = B$
$B + B = B$

$A \cdot B = B \cdot A$ $\quad A + B = B + A$

$(A+B)+C = A+(B+C)$
$(A \cdot B) \cdot C = A \cdot (B \cdot C)$

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

funzione (descrizione)

→ Tab Verità

→ Somma di prodotti

tanti addendi quanti sono gli 1 nella colonna della uscita

fattori con quanti sono gli ingressi

$z = \bar{x}\bar{y}r_{in} + \bar{x}y\bar{r_{in}} + x\bar{y}\bar{r_{in}} + xyr_{in}$

$r_{out} = \bar{x}yr_{in} + x\bar{y}r_{in} + xy\bar{r_{in}} + xyr_{in}$

$\bar{y}(\bar{x}r_{in} + x\bar{r_{in}})$

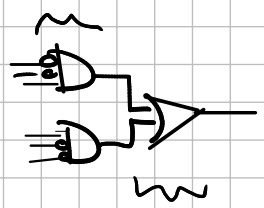
$yr_{in}(\bar{x} + x)$

$yr_{in} \cdot 1$

yr_{in}

$r_{out} = yr_{in} + x\bar{y}r_{in} + xy\bar{r_{in}}$

$\bar{x}\bar{y}r_{in} + x\bar{y}r_{in}$



$\bar{y}(\bar{x}r_{in} + x\bar{r_{in}})$