16. Esercizi dal libro vari

mercoledì 6 maggio 2020 13:30

$(x \downarrow y) \uparrow \bar{z}$ } La freccia in basso è il NOR ($\equiv \overline{OR}$)

$(x + y) + z$ } La freccia in alto è il NAND ($\equiv \overline{AND}$)

x	y	z	$(x \downarrow y) \uparrow \bar{z}$	$(x+y)+z$
0	0	0	$1 \uparrow 1 = 0$	$0+0=0$
0	0	1	$1 \uparrow 0 = 1$	$0+1=1$
0	1	0	$0 \uparrow 1 = 1$	$1+0=1$
0	1	1	$0 \uparrow 0 = 1$	$1+1=1$
1	0	0	$0 \uparrow 1 = 1$	$1+0=1$
1	0	1	$0 \uparrow 0 = 1$	$1+1=1$
1	1	0	$0 \uparrow 1 = 1$	$1+0=1$
1	1	1	$0 \uparrow 0 = 1$	$1+1=1$

Le due funzioni sono equivalenti. La seconda è uguale alla prima se si applica De Morgan:

$$(x+y)+z = \overline{\overline{(x+y)+z}} = \overline{\overline{(x+y)} \cdot \bar{z}} =$$

$\overline{x+y} \equiv x \downarrow y$

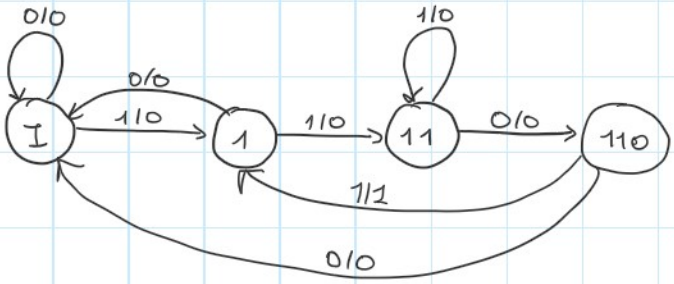
$$= \overline{(x \downarrow y) \cdot \bar{z}} = (x \downarrow y) \uparrow \bar{z}$$

$\overline{a \cdot \bar{z}} \equiv a \uparrow \bar{z}$

Il circuito sequenziale riconosce la sequenza 1101 ed ha in uscita 0

es.

t(x)	0	1	2	3	4	5	6	...
x	0	1	1	1	0	1	0	
z	0	0	0	0	0	1	0	



Codifica!

$\lceil \log_2 4 \rceil = 2$

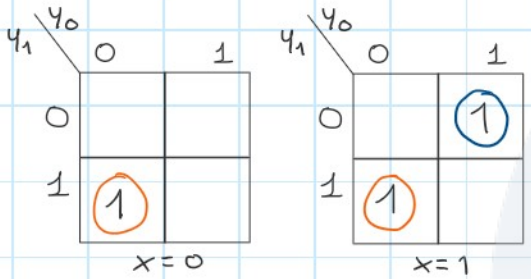
Stato	Codifica
I	0 0
1	0 1
11	1 0
110	1 1

Tabella delle Transizioni!

		x = 0			x = 1		
y_1	y_0	y_1'	y_0'	z	y_1'	y_0'	z
I 0	0	0	0	0	0	1	0
1 0	1	0	0	0	1	0	0
11 1	0	1	1	0	1	0	0
110 1	1	0	0	0	0	1	1

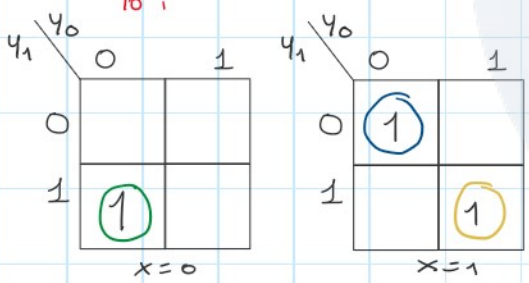
Mappe di Karnaugh:

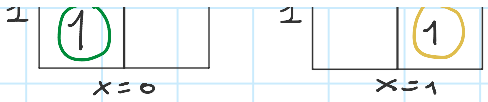
y_1':



$y_1' = y_1\bar{y}_0 + \bar{y}_1 y_0 x$

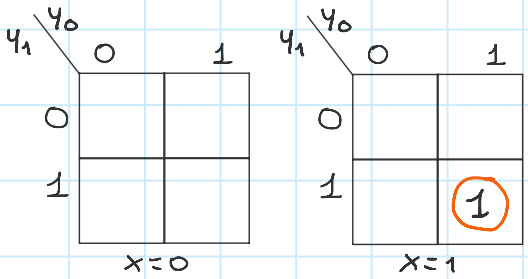
y_0':





$$Y_0' = Y_1\bar{Y}_0\bar{x} + \bar{Y}_1\bar{Y}_0x + Y_1Y_0x$$

z:



$$z = Y_1Y_0x$$