

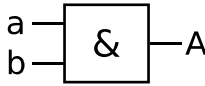
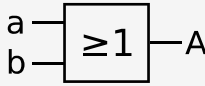
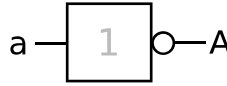
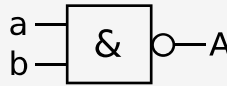
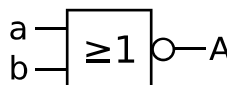
2011-(04)apr-27: dag 13

Digital teknik

Grindar, sanningstabell och transmissionsfunktion

Insigalner: a och b

Utsignal: A

Grind	Symbol	Sanningstabell	Räkneregler															
AND		<table><tr><td>a</td><td>b</td><td>A</td></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>1</td></tr></table>	a	b	A	0	0	0	0	1	0	1	0	0	1	1	1	$a \cdot b = A$ $0 \cdot 0 = 0$ $0 \cdot 1 = 0$ $1 \cdot 0 = 0$ $1 \cdot 1 = 1$
a	b	A																
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1	1	1																
OR		<table><tr><td>a</td><td>b</td><td>A</td></tr><tr><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>1</td><td>1</td></tr></table>	a	b	A	0	0	0	0	1	1	1	0	1	1	1	1	$a + b = A$ $0 + 0 = 0$ $0 + 1 = 1$ $1 + 0 = 1$ $1 + 1 = 1$
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NOT		<table><tr><td>a</td><td>A</td></tr><tr><td>0</td><td>1</td></tr><tr><td>1</td><td>0</td></tr></table>	a	A	0	1	1	0	$\bar{a} = A$ $\bar{0} = 1$ $\bar{1} = 0$									
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NAND "not and"		<table><tr><td>a</td><td>b</td><td>A</td></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>1</td></tr><tr><td>1</td><td>0</td><td>1</td></tr><tr><td>1</td><td>1</td><td>0</td></tr></table>	a	b	A	0	0	1	0	1	1	1	0	1	1	1	0	$\overline{a \cdot b} = A$ $\overline{0 \cdot 0} = 1$ $\overline{0 \cdot 1} = 1$ $\overline{1 \cdot 0} = 1$ $\overline{1 \cdot 1} = 0$
a	b	A																
0	0	1																
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NOR		<table><tr><td>a</td><td>b</td><td>A</td></tr><tr><td>0</td><td>0</td><td>1</td></tr><tr><td>0</td><td>1</td><td>0</td></tr><tr><td>1</td><td>0</td><td>0</td></tr><tr><td>1</td><td>1</td><td>0</td></tr></table>	a	b	A	0	0	1	0	1	0	1	0	0	1	1	0	$\overline{a + b} = A$ $\overline{0 + 0} = 1$ $\overline{0 + 1} = 0$ $\overline{1 + 0} = 0$ $\overline{1 + 1} = 0$
a	b	A																
0	0	1																
0	1	0																
1	0	0																
1	1	0																

1:an i not skrivs inte alltid ut.

Det är viktigt att tänka på om det är en ring vid sidan om fyrkanten.

DeMorgans sats:

$$\overline{a + b} = \bar{a} \cdot \bar{b}$$

$$\overline{a \cdot b} = \bar{a} + \bar{b}$$

Observera skrivfel i den blåa boken!

NOR: $\overline{a + b} = \bar{a} \cdot \bar{b}$

NAND: $\overline{a \cdot b} = \bar{a} + \bar{b}$

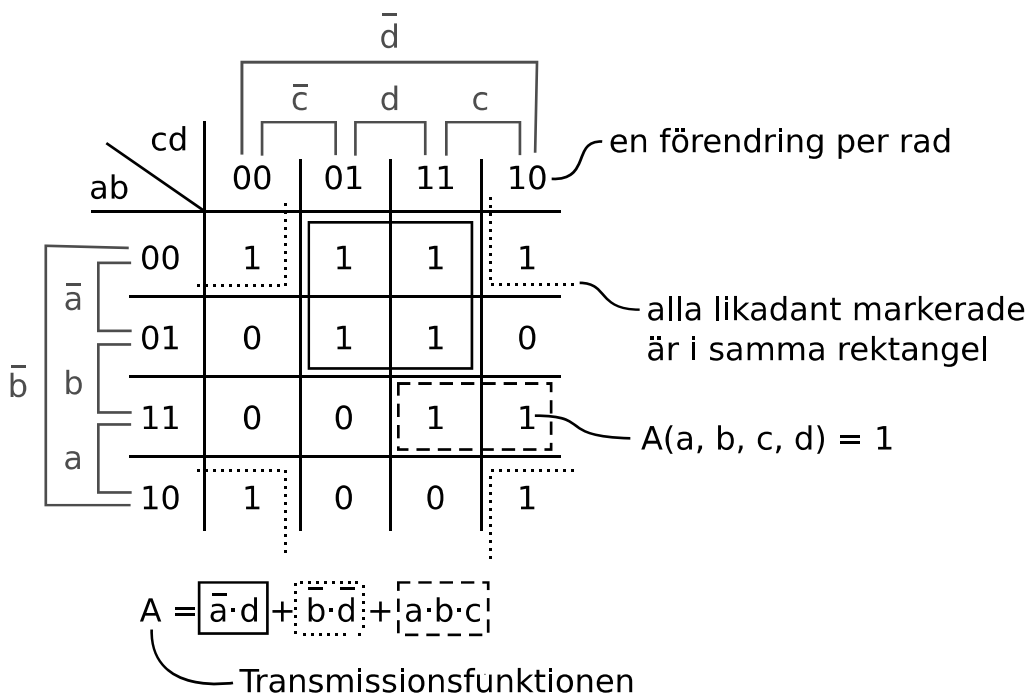
Inte samma!

Karnaughdiagram (kort)

En sorts sanningstabell

Används till att på ett enkelt sätt minimisera kretsar.

[U8.11]



Gruppera i rektanglar med sidor av 2-potens (2^n).

Alla hörn bildar en 2×2 rektangel eftersom man får gå från ena kanten till motstående kant (ty en föreøndring i variablerna). Gör så stora rektanglar som möjligt, de får överlappa.