Uppgift 1: T. 970312

Primimplikatorer: $\bar{u}v, vx, wx, v\bar{w}, z, y$ (Erhålls tex med Tison's metod)

z är enda primimplikator som täcker termerna vz och $\bar{v}\bar{y}z$

y är enda primimplikator som täcker termerna uy och $\bar{v}y$

Reducerad täckningstabell

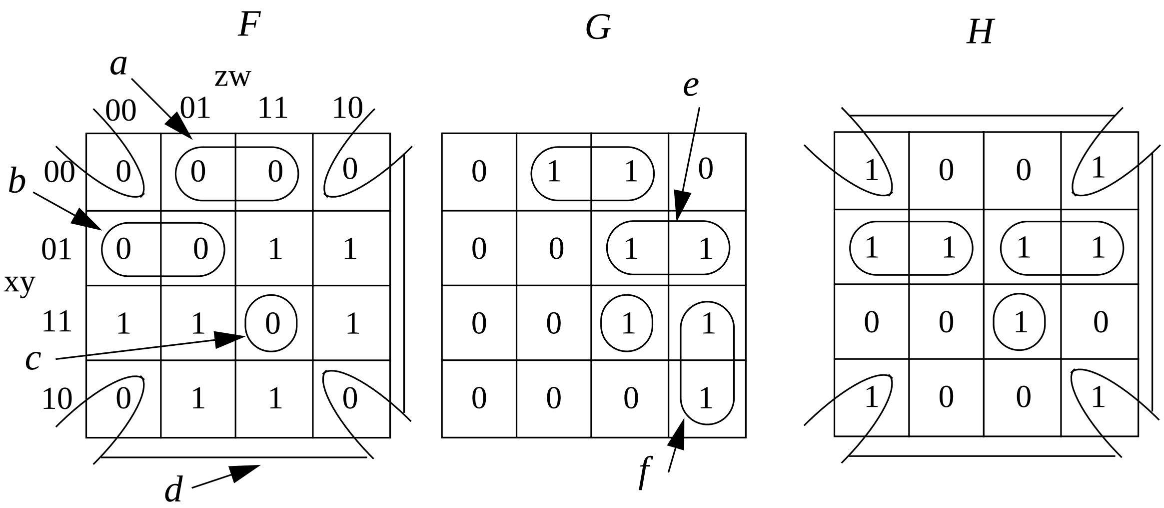
Täcknings-variabel	Primimplikator	Termer som skall täckas			
		$\bar{u}v$	$v\bar{w}\bar{x}$	vx	wx
a	A=$\bar{u}v$	1	$\bar{u}$	$\bar{u}$	$\bar{u}v$
b	B=vx	x	0	1	v
c	C=wx	wx	0	1	1
d	D=$v\bar{w}$	$\bar{w}$	1	$\bar{w}$	0

Täckningsvillkoret: $P = ad \cdot (b + cd) \cdot c = acd + abcd$

acd ger den minimala formen:

$f = \bar{u}v + wx + v\bar{w} + z + y$

Uppgift 2: T. 970312



$\bar{F} = a + b + c + d$ $\quad a = \bar{x}\bar{y}w \quad d = \bar{y}\bar{w}$

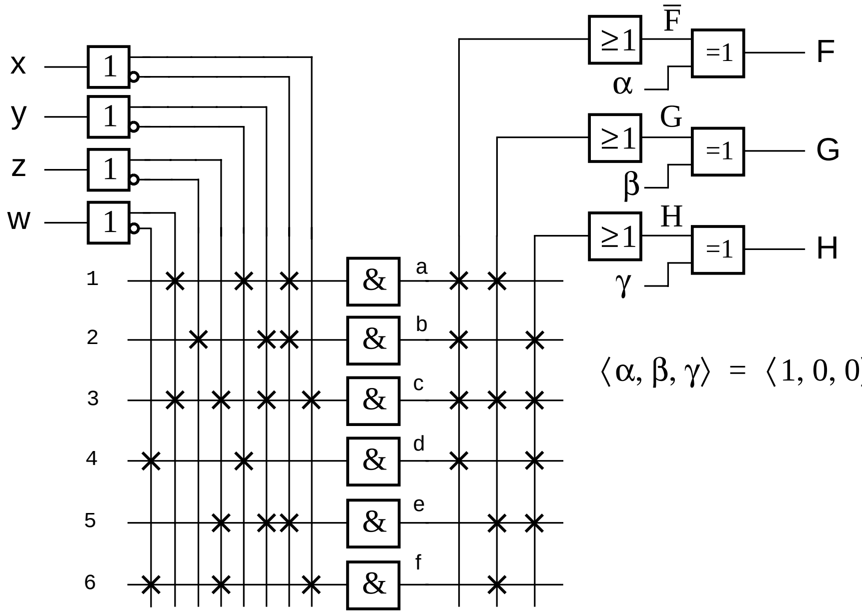
$G = a + c + e + f$ $\quad b = \bar{x}y\bar{z} \quad e = \bar{x}yz$

$H = b + c + d + e$ $\quad c = xyzw \quad f = xz\bar{w}$

6 produkttermer krävs: $\langle \alpha, \beta, \gamma \rangle = \langle 1, 0, 0 \rangle$

2 forts.

Realisering



$\langle \alpha, \beta, \gamma \rangle = \langle 1, 0, 0 \rangle$

Uppgift 3: T. 970312

Nod *x*

$$F_x(a, b, c, d, x) = \overline{\overline{x\bar{a}} \cdot (x + \bar{d})} = x\bar{a} + \bar{x}d$$

$$\frac{dF_x}{dx} = d \oplus \bar{a}$$

$$x(a, b, c, d) = a \cdot \overline{bcd}$$

x s-a-0: $T_{\bar{x}} = (d \oplus \bar{a})a(\bar{b} + \bar{c} + \bar{d}) = ad(\bar{b} + \bar{c})$

x s-a-1: $T_x = (d \oplus \bar{a})\overline{x(a, b, c, d)} = (d \oplus \bar{a})(\bar{a} + bcd) = \bar{a}\bar{d} + abcd$

Testvektorer: $\langle abcd \rangle$	s-a-0:	<10-1> , <1-01>
	s-a-1:	<0--0>, <1111>

Nod *a*

$$F(a, b, c, d) = \overline{\overline{\bar{a} \cdot a \cdot \overline{bcd}} \cdot (a \cdot \overline{bcd} + \bar{d})} = \bar{a}d + bcd$$

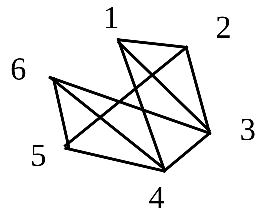
$$\frac{dF}{da} = d(\bar{b} + \bar{c})$$

Testvektorer: $\langle abcd \rangle$	s-a-0:	<10-1> , <1-01>
	s-a-1:	<00-1>, <0-01>

Uppgift 4: T. 970312

2	**(5,6) (1,4)**				
3		**(2,5)**			
4	**(2,5)**	~~**(2,6) (1,4)**~~	**(4,5)**		
5	~~**(3,5)**~~	**(3,6) (1,4)**	**X**	**(2,3)**	
6	**X**	**X**		**(1,2) (4,5)**	**(1,2) (1,3)**
	1	**2**	**3**	**4**	**5**

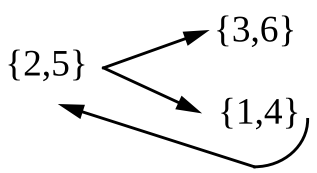
Relationsgraf



(a) MFM: {1,2,3}, {1,3,4}, {2,5}, {3,4,6}, {4,5,6}

(b)

C_i	$I(C_i)$
{123}	{56}, {25}, {14}
{134}	{25}, {45}
{25}	{36},{14}
{346}	{12},{45}
{456}	{123}
{36}	∅
{14}	{25}



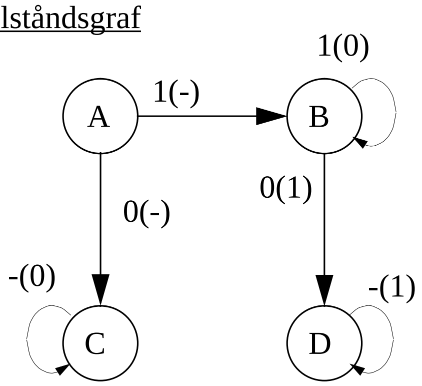
a={1,4} ; b={2,5} c={3,6}
bildar en sluten och täckande
minimal uppsättning FM

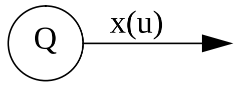
Q	$Q^+(u)$			
	$x_1\,x_2$			
	00	01	11	10
a	b(0)	a(1)	a(0)	c(-)
b	c(0)	b(-)	a(0)	b(0)
c	a(1)	b(1)	b(-)	c(1)

Uppgift 5: T. 970312

Studera först ett synkront sekvensnät med $\sigma_x = x_n, x_{n-1}, \ldots x_1$,

Tillståndsgraf



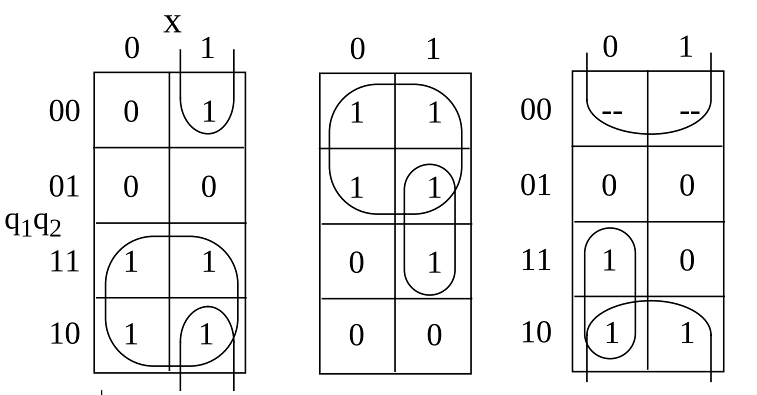


Starttillstånd: A

Eftersom n>1 kan utsignalen sättas till "-" i tillstånd A

Tillståndstabell och kodning

$\delta(\lambda)$ q_1q_2	$q_1^+q_2^+(u)$ x=0	$q_1^+q_2^+(u)$ x=1
A = 00	01(-)	11(-)
C = 01	01(0)	01(0)
B = 11	10(1)	11(0)
D = 10	10(1)	10(1)



$q_1^+ = q_1 + q_2'x$ $\quad q_2^+ = q_1' + q_2x$ $\quad u = x'q_1 + q_2'$

OBS! Cell i har insignalen x_{n-i+1}

Cell i: i=1, 2, ... , n-1

$q_{1(i+1)} = q_{1i} + q_{2i}'x_{(n-i+1)}$

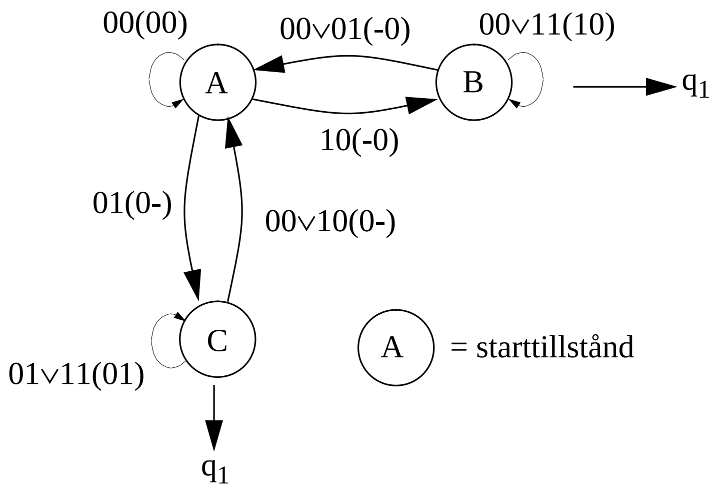
$q_{2(i+1)} = q_{1i}' + q_{2i}x_{(n-i+1)}$

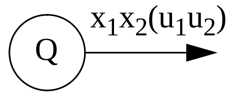
Cell n:

$u = x_1'q_{1n} + q_{2n}'$

Uppgift 6: T. 970312

Tillståndsgraf





Kodning

Q	q_1q_2
A	0 0
B	0 1
--	1 1
D	1 0

Kodad tillståndstabell

$\delta(\lambda)$	$q_1^+q_2^+(u_1u_2)$			
q_1q_2	00	01	11	10
00	00(00)	10(0-)	--	01(-0)
01	00(-0)	00(-0)	01(10)	01(10)
11	--	--	--	--
10	00(0-)	10(01)	10(01)	00(0-)

Kodningen tillåter:

$u_1 = q_2$

$u_2 = q_1$

q_1q_2 \ x_1x_2	00	01	11	10
00	0	1	--	0
01	0	0	0	0
11	--	--	--	--
10	0	1	1	0

$$q_1^+ = \overline{q_2 + \overline{x_2}}$$

q_1q_2 \ x_1x_2	00	01	11	10
00	0	0	--	1
01	0	0	1	1
11	--	--	--	--
10	0	0	0	0

$$q_2^+ = \overline{q_1 + \overline{x_1}}$$

Kretsrealisering