Naloga

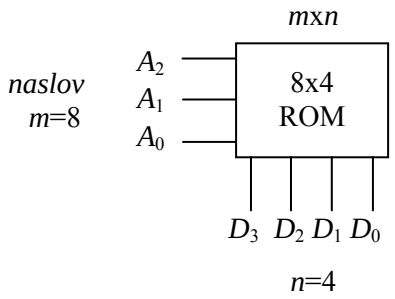
Na voljo imamo pomnilnik ROM 8x4 (*m* x *n*). Na izhodu pomnilnika želimo

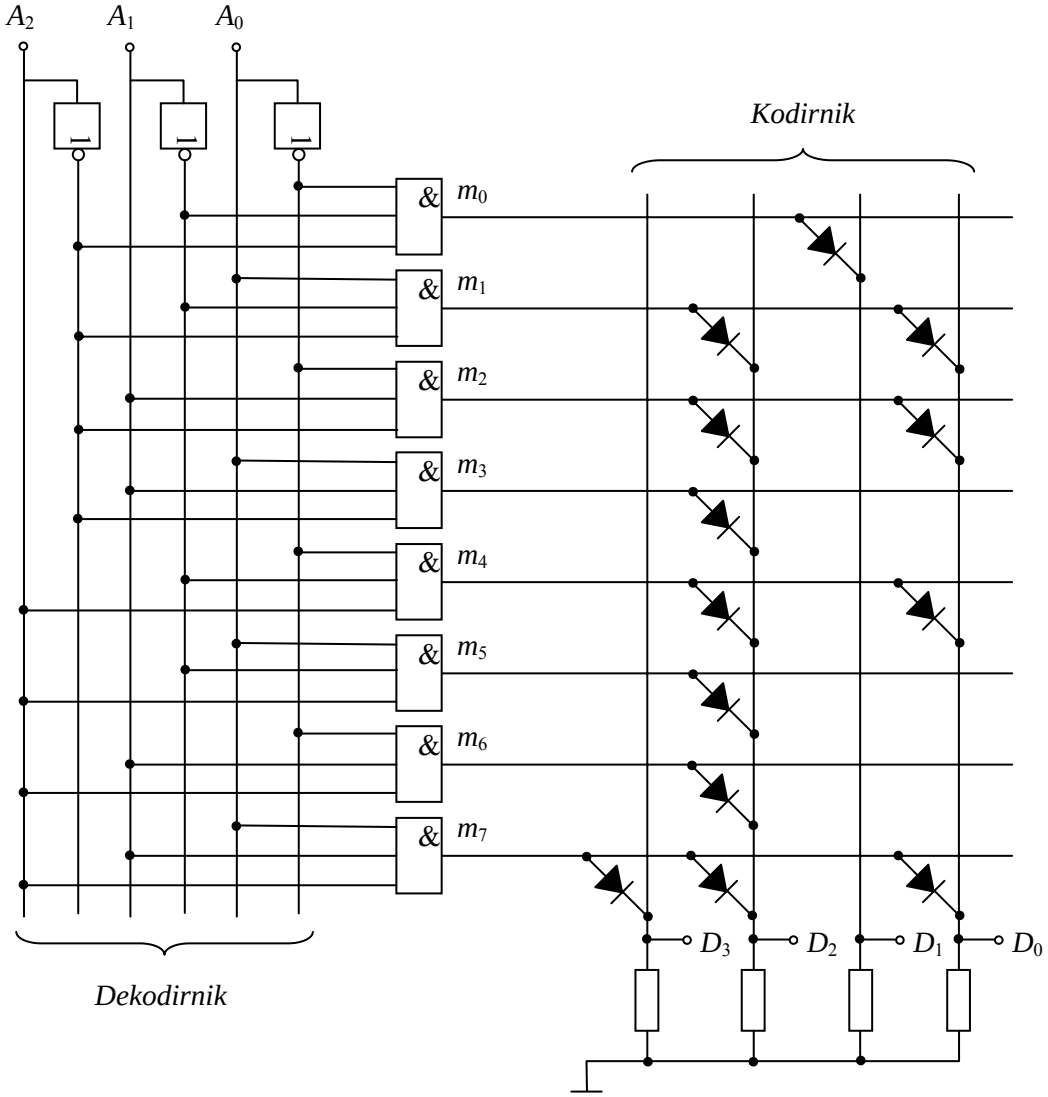
$$D_0 = A_0 \oplus A_1 \oplus A_2$$
$$D_1 = \overline{A_0 + A_1 + A_2}$$
$$D_2 = A_0 + A_1 + A_2$$
$$D_3 = A_0 A_1 A_2$$

Narišite v pomnilniku ustrezne povezave.

Rešitev

	A_2	A_1	A_0	D_3	D_2	D_1	D_0
0	0	0	0	0	0	1	0
1	0	0	1	0	1	0	1
2	0	1	0	0	1	0	1
3	0	1	1	0	1	0	0
4	1	0	0	0	1	0	1
5	1	0	1	0	1	0	0
6	1	1	0	0	1	0	0
7	1	1	1	1	1	0	1





Naloga

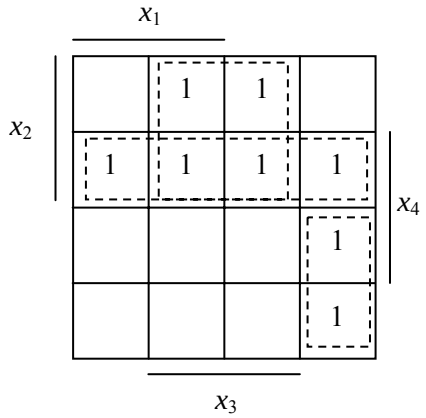
Za podano preklopno funkcijo prikaži realizacijo z opisano družino LSI gradnikov

$$f_1(x_1,x_2,x_3,x_4) = \vee(0,1,5,6,7,13,14,15)$$
$$f_2(x_1,x_2,x_3,x_4) = \vee(5,7,8,9,10,11,12,13,14,15)$$

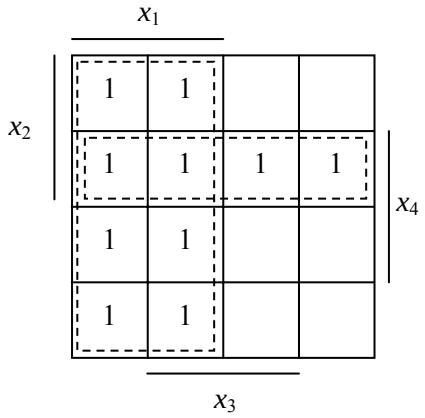
Rešitev

Poiščemo najprej MDNO:

$$f_1(x_1,x_2,x_3,x_4) = x_2x_3 + x_2x_4 + \overline{x}_1\overline{x}_2\overline{x}_3$$



$$f_2(x_1,x_2,x_3,x_4) = x_1 + x_2x_4$$

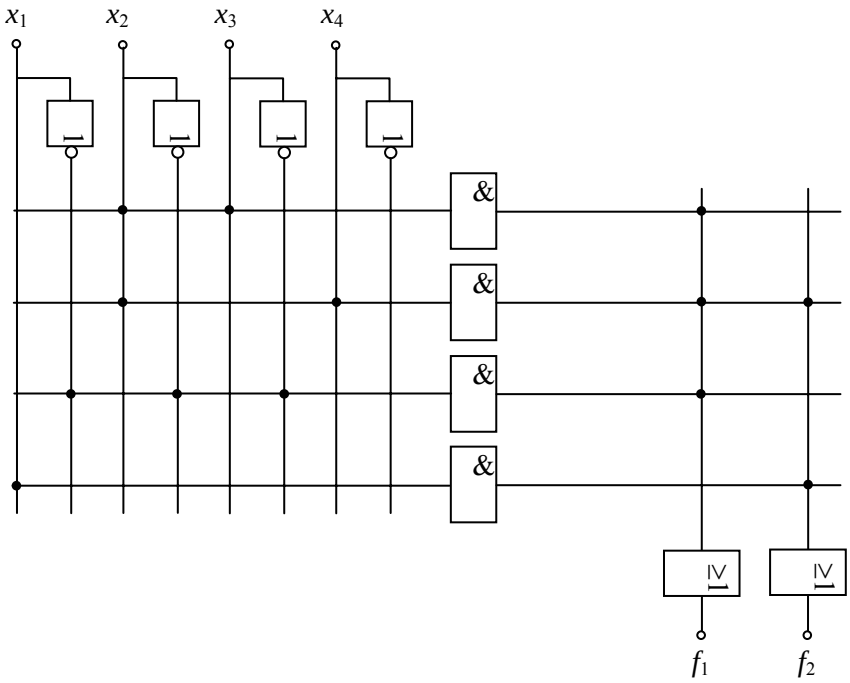


Realizacija s PLA (Programmable Logic Array) – progamibilen AND in OR del gradnika:

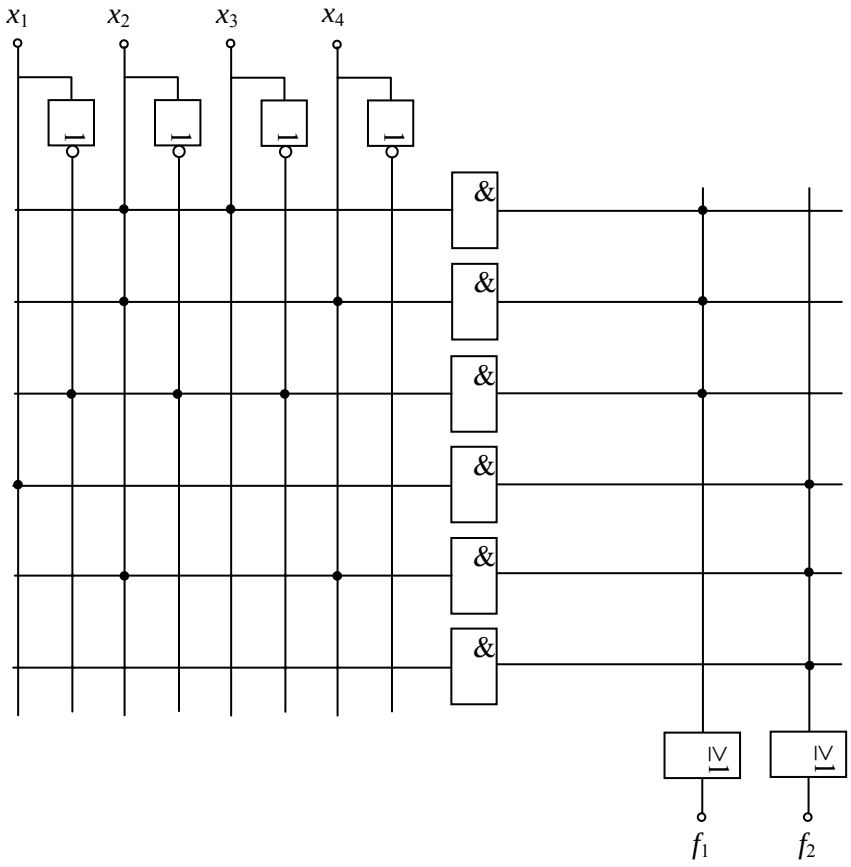
konjunkcije	vhodi				izhodi	
	x_1	x_2	x_3	x_4	f_1	f_2
x_2x_3	-	1	1	-	1	0
x_2x_4	-	1	-	1	①	①
$\overline{x}_1\overline{x}_2\overline{x}_3$	0	0	0	-	1	0
x_1	1	-	-	-	0	1

Pri tem pomenijo:
1 – originalna spremenljivak,
0 – komplementarna spremenljivka,
- – spremenljivka ne nastopa v konjunkciji,
① - konjunkcijo si deli več spremenljivk.

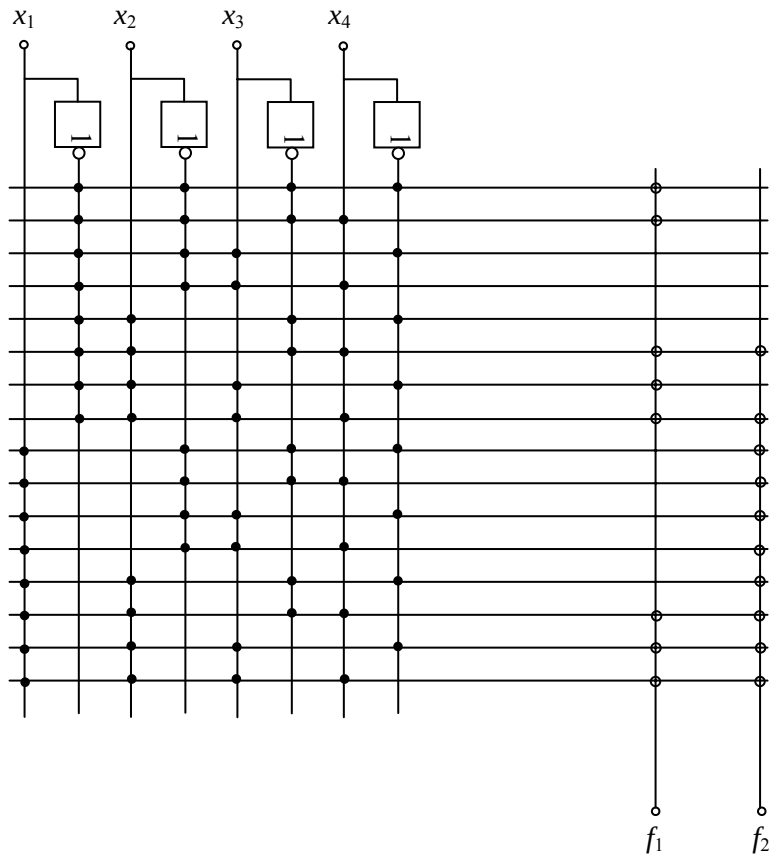
Potrebujemo torej PLA vezje z najmanj štirimi vhodi, štirimi konjunkcijami in dvema izhodoma.



Realizacija s PAL (Programmable Array Logic) – programibilen AND del gradnika:



Realizacija s PLE (Programmable Logic Element) – PROM – programibilen OR del gradnika:



$$f_1(x_1, x_2, x_3, x_4) = \vee(0,1,5,6,7,13,14,15)$$
$$f_2(x_1, x_2, x_3, x_4) = \vee(5,7,8,9,10,11,12,13,14,15)$$