Technical University of Moldova
Inginerical department S.A.

Report

№: 2

ASDN

Subject: Code convertors

Author: Terman Emil FAF161
Prof: S. Munteanu

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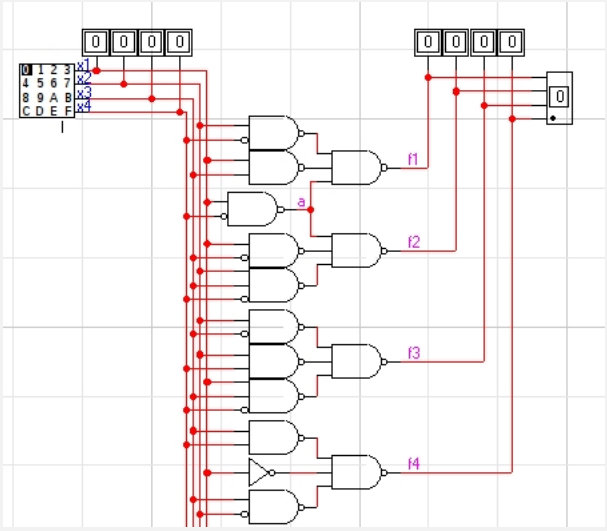
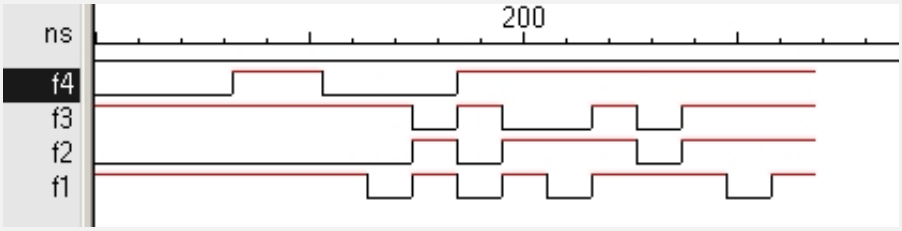
Objective: Practical study of methods to convert codes



Img 1: Convertor Circuit: [8, 6, 1, -4] → [4, 3, 2, 1]



Img 2: Circuit timer

$$C = 34Q$$
$$T_d = 2r$$

$$a = x_1\overline{x_4}$$

$$f_1 = x_2\overline{x_4} + x_1\overline{x_4} + x_1x_3 = \overline{\overline{x_2\overline{x_4}} \cdot \overline{a} \cdot \overline{x_1x_3}}$$

$$f_2 = x_1\overline{x_4} + x_1\overline{x_3} + x_2x_3\overline{x_4} = \overline{\overline{a} \cdot \overline{x_1\overline{x_3}} \cdot \overline{x_2x_3\overline{x_4}}}$$

$$f_3 = x_2\overline{x_3} + x_2x_4 + x_1x_3\overline{x_4} = \overline{x_2\overline{x_3}} \cdot \overline{x_2x_4} \cdot \overline{x_1x_3\overline{x_4}}$$

$$f_4 = x_1 + x_3x_4 + \overline{x_2}x_3 = \overline{\overline{x_1} \cdot \overline{x_3x_4} \cdot \overline{x_2x_3}}$$

	x_1	x_2	x_3	x_4	f_1	f_2	f_3	f_4
	8	6	1	-4	4	3	2	1
0	0	0	0	0	0	0	0	0
1	0	0	1	0	0	0	0	1
2	0	1	0	1	0	0	1	0
3	0	1	1	1	0	0	1	1
4	1	0	0	1	0	1	0	1
5	1	0	1	1	1	0	0	1
6	0	1	0	0	1	0	1	0
7	0	1	1	0	1	1	0	0
8	1	0	0	0	1	1	0	1
9	1	0	1	0	1	1	1	1

Tab 1: Convertion table

f1

x_3x_4 \ x_1x_2	00	01	11	10
00	0	1	*	1
01	*	0	*	0
11	*	0	*	1
10	0	1	*	1

f2

x_3x_4 \ x_1x_2	00	01	11	10
00	0	0	*	1
01	*	0	*	1
11	*	0	*	0
10	0	1	*	1

f3

x_3x_4 \ x_1x_2	00	01	11	10
00	0	1	*	0
01	*	1	*	0
11	*	1	*	0
10	0	0	*	1

f4

x_3x_4 \ x_1x_2	00	01	11	10
00	0	0	*	1
01	*	0	*	1
11	*	1	*	1
10	1	0	*	1

Tab 2: Karnaugh maps for *f1, f2, f3, f4*

Conclusion:

In this laboratory work I learned how to create binary convertors using only *NAND* gates.