

TAREA 2

NAOUFAL EL RHAZZALI/TEC. ELEC. II

$$f(a, b, c, d) = \sum_4 m(2, 3, 5, 7, 10, 11, 15)$$

a) Simplificar

Decimal	a	b	c	d	f
0	0	0	0	0	0
1	0	0	0	1	0
2	0	0	1	0	1
3	0	0	1	1	1
4	0	1	0	0	0
5	0	1	0	1	1
6	0	1	1	0	0
7	0	1	1	1	1
8	1	0	0	0	0
9	1	0	0	1	0
10	1	0	1	0	1
11	1	0	1	1	1
12	1	1	0	0	0
13	1	1	0	1	0
14	1	1	1	0	0
15	1	1	1	1	1

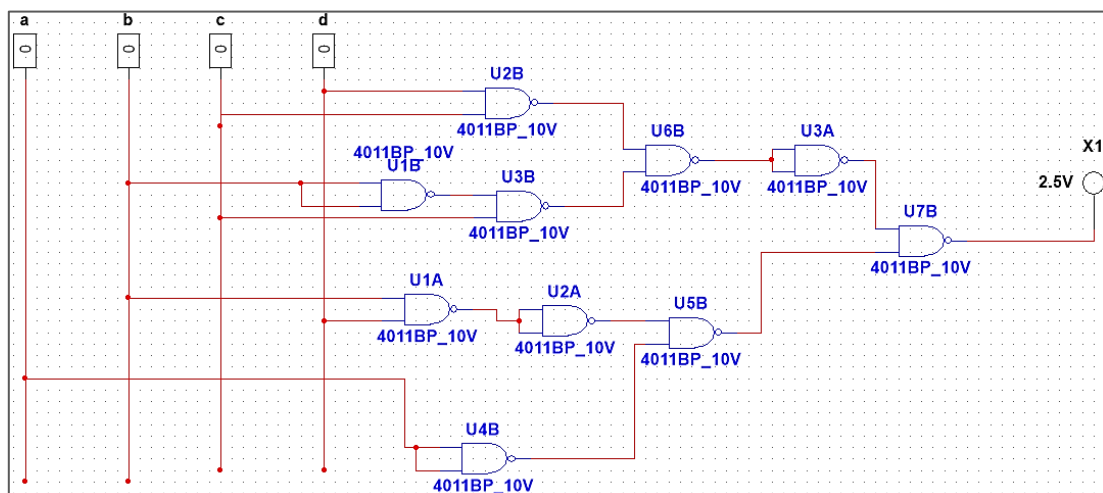
cd \ ab	00	01	11	10
00	0	0	1	1
01	0	1	1	0
11	0	0	1	0
10	0	0	1	1

$$f(a, b, c, d) = cd + \bar{b}c + \bar{a}bd \rightarrow f(a, b, c, d) = \overline{\overline{cd + \bar{b}c + \bar{a}bd}} = \overline{\overline{cd} \cdot \overline{\bar{b}c} \cdot \overline{\bar{a}bd}}$$

$$(\overline{\bar{a}bd} = \overline{\bar{a}} + \overline{\bar{b}d} = \overline{\bar{a}} + \overline{\bar{b}d} = \overline{\bar{a} \cdot bd})$$

$$\rightarrow f(a, b, c, d) = \overline{\overline{cd + \bar{b}c + \bar{a}bd}} = \overline{\overline{cd} \cdot \overline{\bar{a} \cdot bd} \cdot \overline{\bar{b}c}}$$

b) Implementar con Puertas NAND de dos entradas



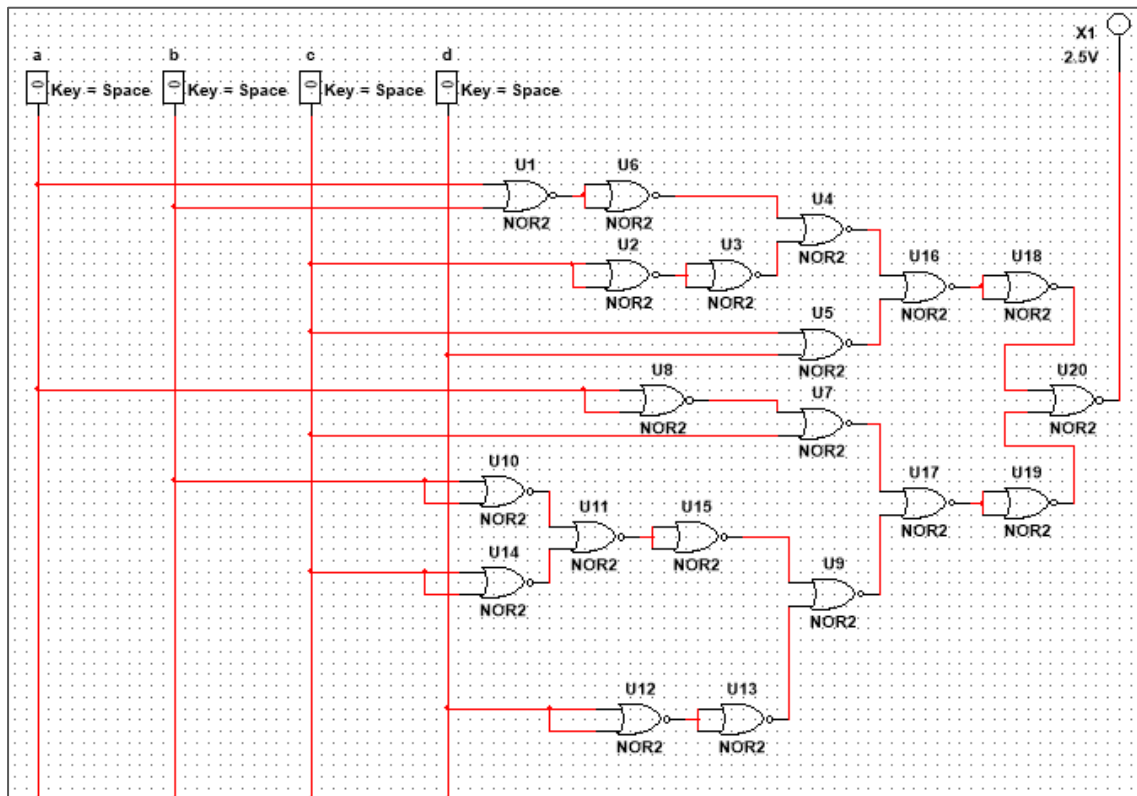
Implementación Con Puertas NAND

- c) Obtener la función del sistema expresada en términos máximos, simplificar e implementar con puertas NOR de dos entradas

$$f(a, b, c, d) = \prod_4 M(0, 1, 4, 6, 8, 9, 12, 13, 14)$$

cd \ ab	00	01	11	10
00	0	0	1	1
01	0	1	1	0
11	0	0	1	0
10	0	0	1	1

$$\rightarrow f(a, b, c, d) = (a + b + c) \cdot (c + d) \cdot (\bar{a} + c) \cdot (\bar{b} + \bar{c} + d)$$



Implementación Con Puertas NOR