

# Sistema Combinacional

Nombre del Sistema Combinacional : display\_controler

Variables de Entrada :

A = clk  
B = par  
C = i1  
D = i0

Variables de Salida :

F1 = a  
F2 = b  
F3 = c  
F4 = d  
F5 = e  
F6 = f  
F7 = g

Tabla de Verdad

A	B	C	D	F1	F2	F3	F4	F5	F6	F7
0	0	0	0	X	X	X	X	X	X	X
0	0	0	1	0	1	1	0	0	0	0
0	0	1	0	1	1	0	1	1	0	1
0	0	1	1	1	1	1	1	0	0	1
0	1	0	0	X	X	X	X	X	X	X
0	1	0	1	0	0	0	0	0	0	0
0	1	1	0	0	0	0	0	0	0	0
0	1	1	1	0	0	0	0	0	0	0
1	0	0	0	X	X	X	X	X	X	X
1	0	0	1	0	1	1	0	0	0	0
1	0	1	0	1	1	0	1	1	0	1
1	0	1	1	1	1	1	1	0	0	1
1	1	0	0	X	X	X	X	X	X	X
1	1	0	1	0	1	1	0	0	0	0
1	1	1	0	1	1	0	1	1	0	1
1	1	1	1	1	1	1	1	0	0	1

Diagramas de Veitch-Karnaugh

F1 - a

		AB			
CD		00	01	11	10
	00	X	X	X	X
	01	0	0	0	0
	11	1	0	1	1
	10	1	0	1	1

F2 - b

		AB			
CD		00	01	11	10
	00	X	X	X	X
	01	1	0	1	1
	11	1	0	1	1
	10	1	0	1	1

F3 - c

		AB			
CD		00	01	11	10
	00	X	X	X	X
	01	1	0	1	1
	11	1	0	1	1
	10	0	0	0	0

F4 - d

		AB			
CD		00	01	11	10
	00	X	X	X	X
	01	0	0	0	0
	11	1	0	1	1
	10	1	0	1	1

F5 - e

		AB			
CD		00	01	11	10
	00	X	X	X	X
	01	0	0	0	0

11	0	0	0	0
10	1	0	1	1

F6 - f

		AB			
CD		00	01	11	10
	00	X	X	X	X
	01	0	0	0	0
	11	0	0	0	0
	10	0	0	0	0

F7 - g

		AB			
CD		00	01	11	10
	00	X	X	X	X
	01	0	0	0	0
	11	1	0	1	1
	10	1	0	1	1

Formas Normales

Forma normal disyuntiva

F1: 2, 3, 10, 11, 14, 15  
 F2: 1, 2, 3, 9, 10, 11, 13, 14, 15  
 F3: 1, 3, 9, 11, 13, 15  
 F4: 2, 3, 10, 11, 14, 15  
 F5: 2, 10, 14  
 F6:  
 F7: 2, 3, 10, 11, 14, 15

Forma normal conjuntiva

F1: 1, 5, 6, 7, 9, 13  
 F2: 5, 6, 7  
 F3: 2, 5, 6, 7, 10, 14  
 F4: 1, 5, 6, 7, 9, 13  
 F5: 1, 3, 5, 6, 7, 9, 11, 13, 15  
 F6: 1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14, 15  
 F7: 1, 5, 6, 7, 9, 13

Términos Irrelevantes

F1: 0, 4, 8, 12  
 F2: 0, 4, 8, 12  
 F3: 0, 4, 8, 12  
 F4: 0, 4, 8, 12  
 F5: 0, 4, 8, 12  
 F6: 0, 4, 8, 12  
 F7: 0, 4, 8, 12

Expresiones SOP simplificadas

F0 : ( $\sim B \cdot C$ )+(A $\cdot$ C)  
 F1 : ( $\sim B$ )+(A)  
 F2 : ( $\sim B \cdot D$ )+(A $\cdot$ D)  
 F3 : ( $\sim B \cdot C$ )+(A $\cdot$ C)  
 F4 : ( $\sim B \cdot \sim D$ )+(A $\cdot \sim D$ )  
 F5 : 0  
 F6 : ( $\sim B \cdot C$ )+(A $\cdot$ C)

Expresiones POS simplificadas

F0 : (C)\*(A+ $\sim B$ )  
 F1 : (A+ $\sim B$ )  
 F2 : (D)\*(A+ $\sim B$ )  
 F3 : (C)\*(A+ $\sim B$ )  
 F4 : ( $\sim D$ )\*(A+ $\sim B$ )  
 F5 : 0  
 F6 : (C)\*(A+ $\sim B$ )