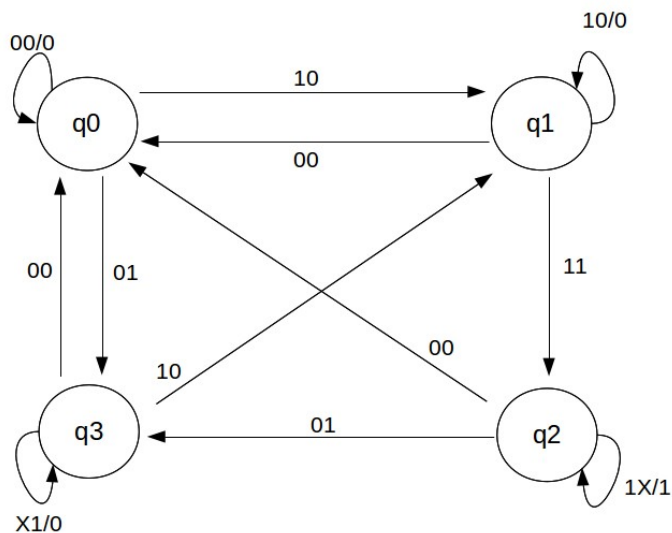


SOLUCIÓN

PROBLEMA 1

S P / C



	00	01	11	10	00	01	11	10
q0	q0	q3		q1	0			
q1	q0		q2	q1				0
q2	q0	q3	q2	q2			1	1
q3	q0	q3	q3	q1		0	0	

q1	√		
q2	1-2	X	
q3	√	2-3	X
	q0	q1	q2

q0 equivalente con q3 → a

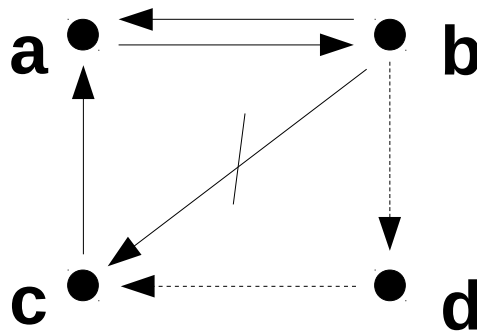
q1 → b

q2 → c

	00	01	11	10	00	01	11	10
a	a	a	a	b	0	0	0	
b	a		c	b				0
c	a	a	c	c			1	1

SOLUCIÓN

a – 00
b – 01
c – 10
d – 11



	00	01	11	10	00	01	11	10
a	a	a	a	b	0	0	0	0
b	a		e d	b	0		0/X	0
c	a	a	c	c	X	X	1	1
d			c				X/1	

y1y0/SP	00	01	11	10	00	01	11	10
00 (a)	00	00	00	01	0	0	0	0
01 (b)	00		11	01	0		0/X	0
10 (c)	00	00	10	10	X	X	1	1
11 (d)			10				X/1	

y1y0/SP	00	01	11	10
00	0	0	0	0
01	0	X	1	0
11	X	X	1	X
10	0	0	1	1

$$y1 = y1.S + y0.P$$

SOLUCIÓN

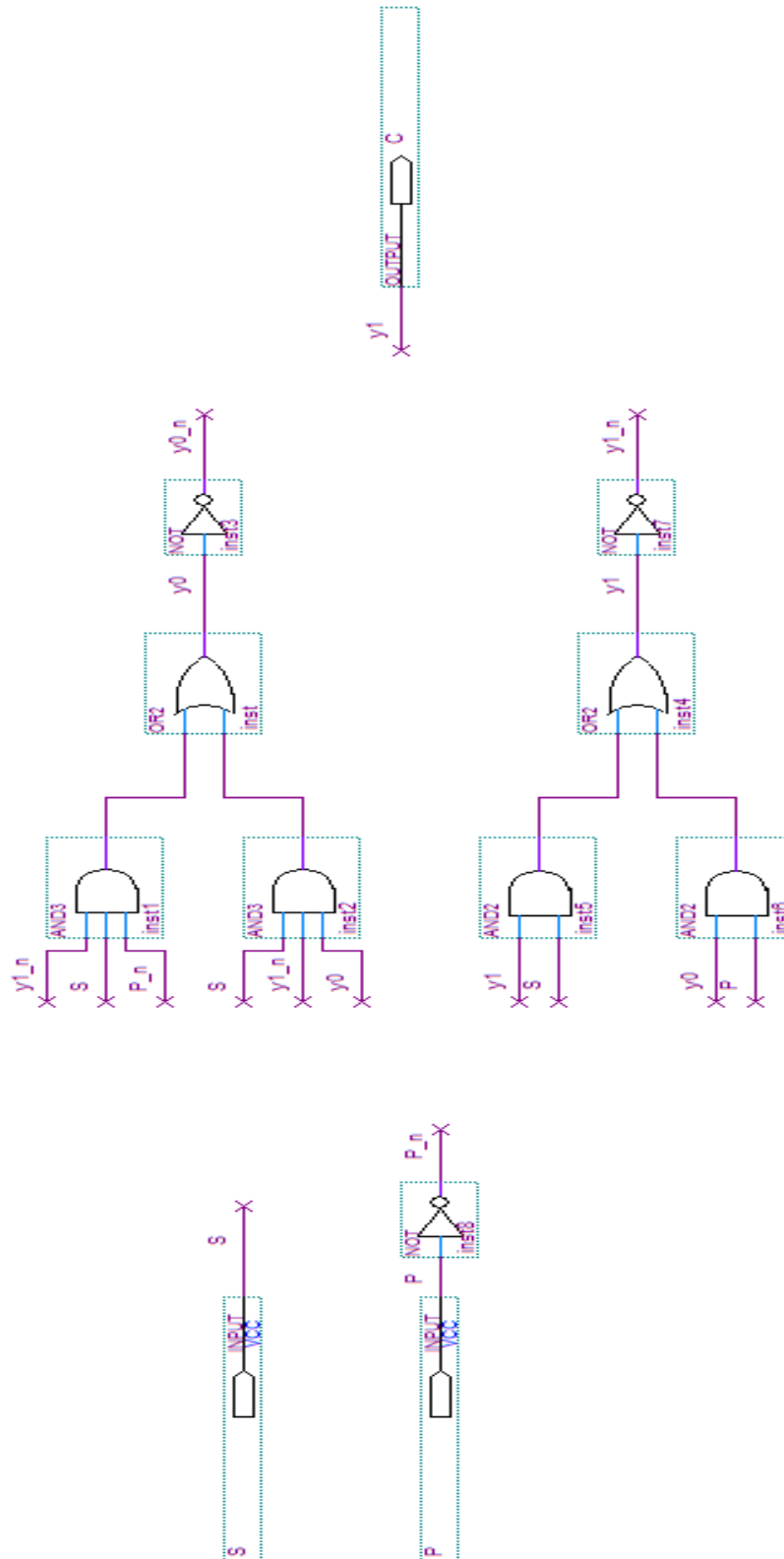
y1y0/SP	00	01	11	10
00	0	0	0	1
01	0	X	1	1
11	X	X	0	X
10	0	0	0	0

$$y_0 = \neg y_1 \cdot S \cdot \neg P + S \cdot \neg y_1 \cdot y_0$$

y1y0/SP	00	01	11	10
00	0	0	0	0
01	0	X	0	0
11	X	X	1	1
10	X	X	X	X

$$C = y_1$$

SOLUCIÓN



SOLUCIÓN

PROBLEMA 2

MODULE: Ex_dic_13
INPUT: S
OUTPUT: P[7..0], rdy, fin
MEMORY: Aux[7..0], S_reg[7..0], Cont[2..0], rdy_reg, fin_reg

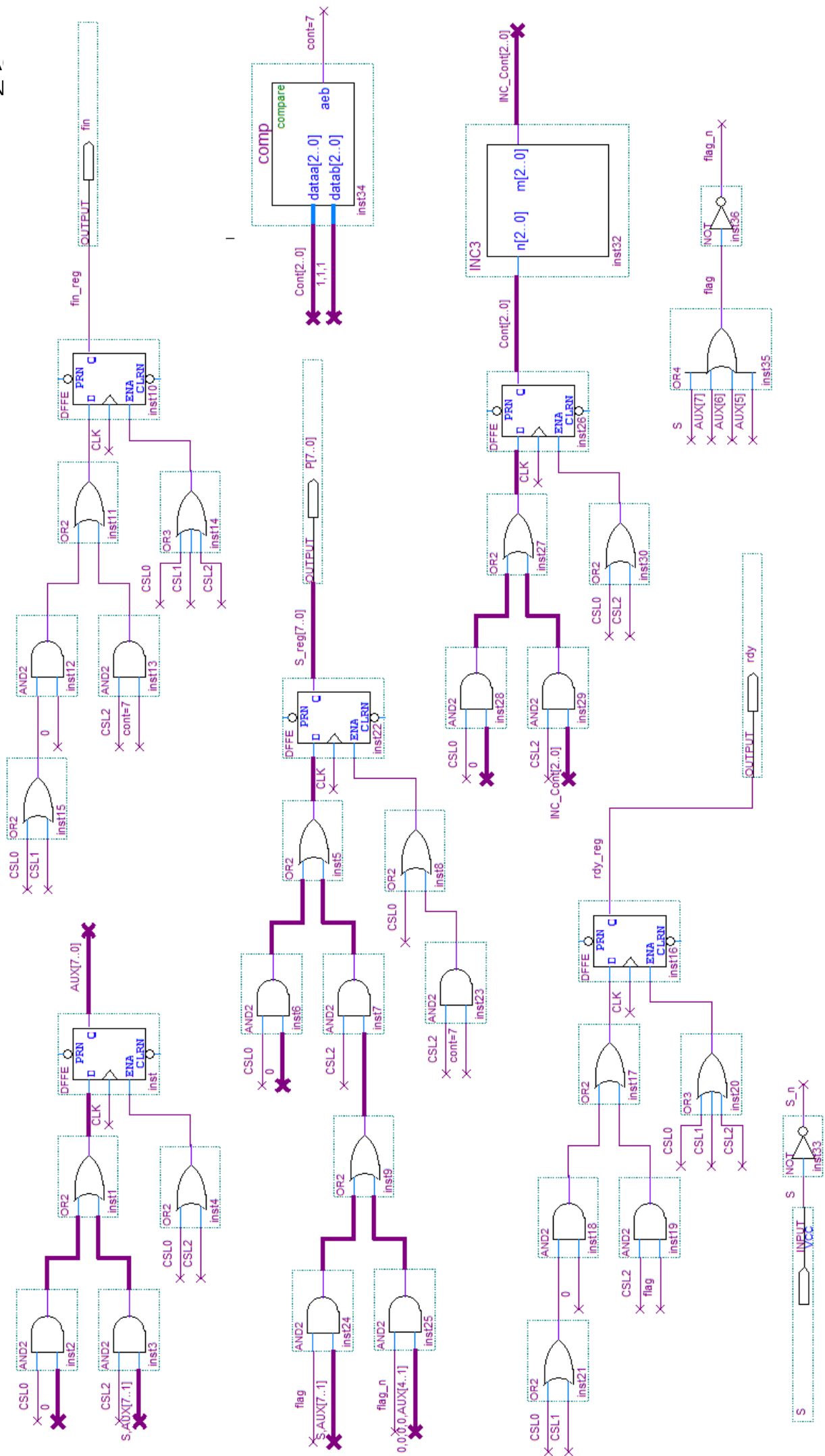
```
0      Aux[] 0; Cont[] 0; S_reg[] 0; rdy_reg 0; fin_reg 0

1      rdy_reg 0; fin_reg 0
      [] (!S , S)/(2,1)

2      Aux[7..0] S,Aux[7..1]
      Cont[] INC(Cont)
      S_reg[7..0]*(Cont=7) S,Aux[7..1] * flag + ( 0,0,0,0,Aux[4..1] ) * !flag
      rdy_reg (Cont=7)
      fin_reg flag
      [] (!flag , flag)/(2,1)

END SEQUENCE
CONTROL RESET(0)
P = S_reg
flag = S+Aux[7]+Aux[6]+Aux[5]
```

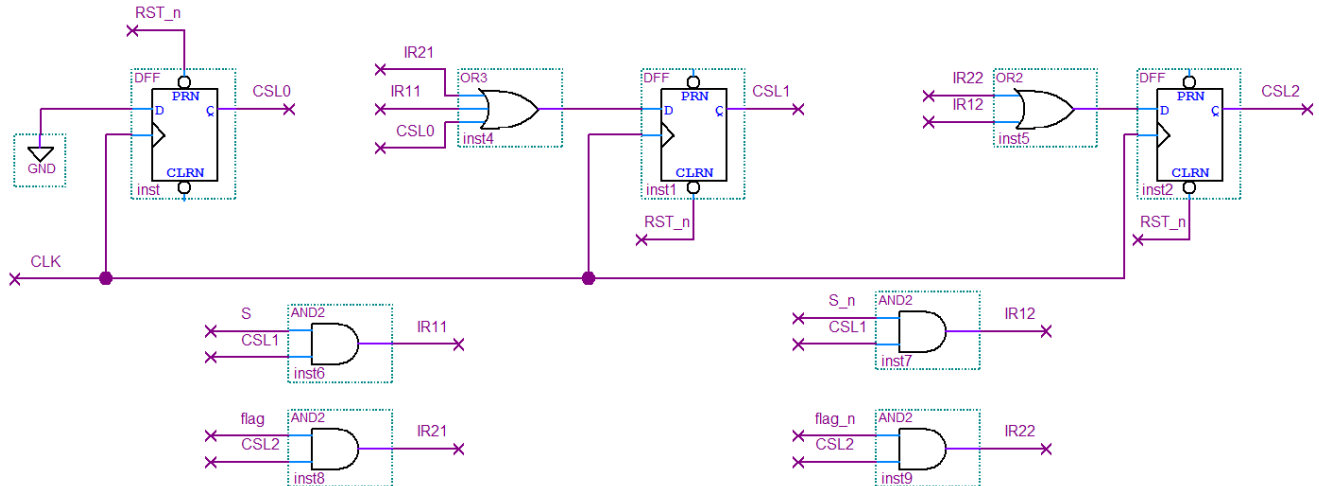
END



SOLUCIÓN

Bloque de Datos:

Bloque de Control:



Ejercicio 1

a) Palabra a codificar: 1101

$$P1 = m0 \oplus m2 \oplus m3 = 1$$

$$P2 = m0 \oplus m1 \oplus m3 = 0$$

$$P3 = m0 \oplus m1 \oplus m2 = 0$$

b) Palabra recibida: 0000011

$$V1 = P1 \oplus m0 \oplus m2 \oplus m3 = 0 \oplus 1 \oplus 0 \oplus 0 = 1$$

$$V2 = P2 \oplus m0 \oplus m1 \oplus m3 = 0 \oplus 1 \oplus 1 \oplus 0 = 0$$

$$V3 = P3 \oplus m0 \oplus m1 \oplus m2 = 0 \oplus 1 \oplus 1 \oplus 0 = 0$$

$$V3V2V1=001$$

Error en el bit 1: P1, es en una paridad no afecta los datos

La palabra codificada sin error es: 1000000

$$m3m2m1m0 = 0011$$

Ejercicio 2

a) Q0 a D-FF0 : $T1 \geq t_{p0max} + t_{sum0max} + t_{setup0min}$

Q0 a D-FF1 : $T2 \geq t_{p0max} + t_{c0max} + t_{sum1max} + t_{setup1min}$

Q1 a D-FF1 : $T3 \geq t_{p1max} + t_{sum1max} + t_{setup1min}$

$$T = \max (T1 , T2 , T3)$$

$$f_{max} = 1/T$$

b) tiempo de setup de X1 = $t_{setup1min} + t_{sum1max}$

tiempo de hold de X1 = $th_{1min} - t_{sum1min}$