

LA secuencia presenta 16 estados por lo que se requieren 4 bits de control

B ₃	B ₂	B ₁	B ₀	a	b	c	d	e	s	g	
0	0	0	0	0	0	0	0	1	1	0	I
0	0	0	1	0	0	1	0	1	0	1	N
0	0	1	0	1	0	0	0	1	1	1	F
0	0	1	1	1	1	0	1	1	0	1	2
0	1	0	0	0	1	1	0	0	1	1	4
0	1	0	1	1	0	1	1	0	1	1	5
0	1	1	0	0	0	0	1	1	1	0	L
0	1	1	1	1	1	1	0	1	1	1	A
1	0	0	0	0	0	0	1	1	1	0	L
1	0	0	1	0	0	0	1	1	1	0	L
1	0	1	0	1	0	0	1	1	1	1	E
1	0	1	1	0	1	1	1	1	1	0	V
1	1	0	0	1	1	1	0	1	1	1	A
1	1	0	1	0	0	0	1	1	1	0	L
1	1	1	0	1	1	1	0	0	0	0	7
1	1	1	1	0	1	1	0	1	1	1	H

Lógica combinatorial del problema usando mapas de Karnaugh:

a

B ₃ B ₂ /B ₁ B ₀	00	01	11	10
00	0	0	1	1
01	0	1	1	0
11	1	0	0	1
10	0	0	0	1

$$a = \bar{B}_3 \cdot \bar{B}_2 \cdot B_1 + \bar{B}_3 \cdot B_2 \cdot B_0 + B_3 \cdot B_1 \cdot \bar{B}_0 + B_3 \cdot B_2 \cdot \bar{B}_0$$

b

$B_3 B_2 / B_1 B_0$	0 0	0 1	1 1	1 0
0 0	0	0	1	0
0 1	1	0	1	0
1 1	1	0	1	1
1 0	0	0	1	0

$$b = B_1 \cdot B_0 + B_2 \cdot \bar{B}_1 \cdot \bar{B}_0 + B_3 \cdot B_2 \cdot B_1$$

c

$B_3 B_2 / B_1 B_0$	0 0	0 1	1 1	1 0
0 0	0	1	0	0
0 1	1	1	1	0
1 1	1	0	1	1
1 0	0	0	1	0

$$c = B_2 \cdot \bar{B}_1 \cdot \bar{B}_0 + \bar{B}_3 \cdot \bar{B}_1 \cdot \bar{B}_0 + B_2 \cdot B_1 \cdot B_0 + B_3 \cdot B_1 \cdot B_0 + B_3 \cdot B_2 \cdot B_1$$

d

$B_3 B_2 / B_1 B_0$	0 0	0 1	1 1	1 0
0 0	0	0	1	0
0 1	0	1	0	1
1 1	0	1	0	0
1 0	1	1	1	1

$$d = B_3 \bar{B}_2 + B_2 \cdot \bar{B}_1 \cdot B_0 + \bar{B}_2 \cdot B_1 \cdot B_0 + \bar{B}_3 \cdot B_2 \cdot B_1 \cdot \bar{B}_0$$

e

$B_3 B_2 / B_1 B_0$	0 0	0 1	1 1	1 0
0 0	1	1	1	1
0 1	0	0	1	1
1 1	1	1	1	0
1 0	1	1	1	1

$$e = \bar{B}_2 + B_1 B_0 + B_3 \cdot \bar{B}_1 + \bar{B}_3 \cdot B_1$$

f

$B_3 B_2 / B_1 B_0$	0 0	0 1	1 1	1 0
0 0	1	0	0	1
0 1	1	1	1	1
1 1	1	1	1	0
1 0	1	1	1	1

$$f = \bar{B}_3 \cdot B_2 + B_3 \cdot \bar{B}_2 + \bar{B}_1 \cdot \bar{B}_0 + B_3 \cdot B_0 + \bar{B}_3 \cdot \bar{B}_0$$

g

$B_3 B_2 / B_1 B_0$	0 0	0 1	1 1	1 0
0 0	0	1	1	1
0 1	1	1	1	0
1 1	1	0	1	0
1 0	0	0	0	1

$$g = \bar{B}_3 \cdot B_0 + B_2 \cdot \bar{B}_1 \cdot \bar{B}_0 + B_2 \cdot B_1 \cdot B_0 + \bar{B}_2 \cdot B_1 \cdot \bar{B}_0$$

Tabla de estados

Q				Q _{n+1}				Salida			
B ₃	B ₂	B ₁	B ₀	B ₃	B ₂	B ₁	B ₀	B ₃	B ₂	B ₁	B ₀
0	0	0	0	0	0	0	1	0	0	0	1
0	0	0	1	0	0	1	0	0	0	1	0
0	0	1	0	0	0	1	1	0	0	1	1
0	0	1	1	0	1	0	0	0	1	0	0
0	1	0	0	0	1	0	1	0	1	0	1
0	1	0	1	0	1	1	0	0	1	1	0
0	1	1	0	0	1	1	1	0	1	1	1
0	1	1	1	1	0	0	0	1	0	0	0
1	0	0	0	1	0	0	1	1	0	0	1
1	0	0	1	1	0	1	0	1	0	1	0
1	0	1	0	1	0	1	1	1	0	1	1
1	0	1	1	1	1	0	0	1	1	0	0
1	1	0	0	1	1	0	1	1	1	0	1
1	1	0	1	1	1	1	0	1	1	1	0
1	1	1	0	1	1	1	1	1	1	1	1
1	1	1	1	0	0	0	0	0	0	0	0

FF_D

B₃

B ₃ B ₂ / B ₁ B ₀	00	01	11	10
00	0	0	0	0
01	0	0	1	0
11	1	1	0	1
10	1	1	1	1

$$D_{B3} = B_3 \cdot \bar{B}_2 + \bar{B}_3 \cdot B_2 \cdot B_1 \cdot B_0 + B_3 \cdot \bar{B}_1 + B_3 \cdot \bar{B}_0$$

B₂

B ₃ B ₂ / B ₁ B ₀	0 0	0 1	1 1	1 0
0 0	0	0	(1)	0
0 1	(1)	(1)	0	(1)
1 1	(1)	(1)	0	(1)
1 0	0	0	(1)	0

$$D_{B_2} = B_2 \cdot \bar{B}_1 + \bar{B}_2 \cdot B_1 \cdot B_0 + B_2 \cdot \bar{B}_0$$

B₁

B ₃ B ₂ / B ₁ B ₀	0 0	0 1	1 1	1 0
0 0	0	(1)	0	(1)
0 1	0	(1)	0	(1)
1 1	0	(1)	0	(1)
1 0	0	(1)	0	(1)

$$D_{B_1} = \bar{B}_1 \cdot B_0 + B_1 \cdot \bar{B}_0$$

B₀

B ₃ B ₂ / B ₁ B ₀	0 0	0 1	1 1	1 0
0 0	(1)	0	0	(1)
0 1	(1)	0	0	(1)
1 1	(1)	0	0	(1)
1 0	(1)	0	0	(1)

$$D_{B_0} = \bar{B}_0$$