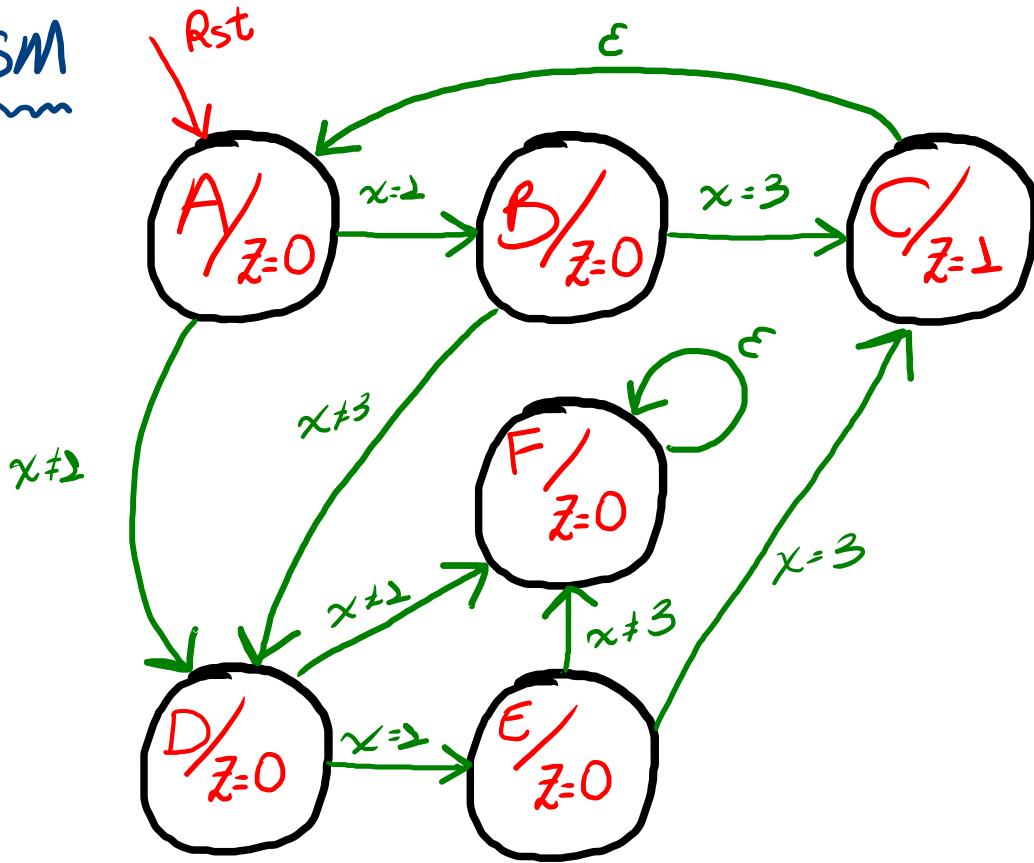


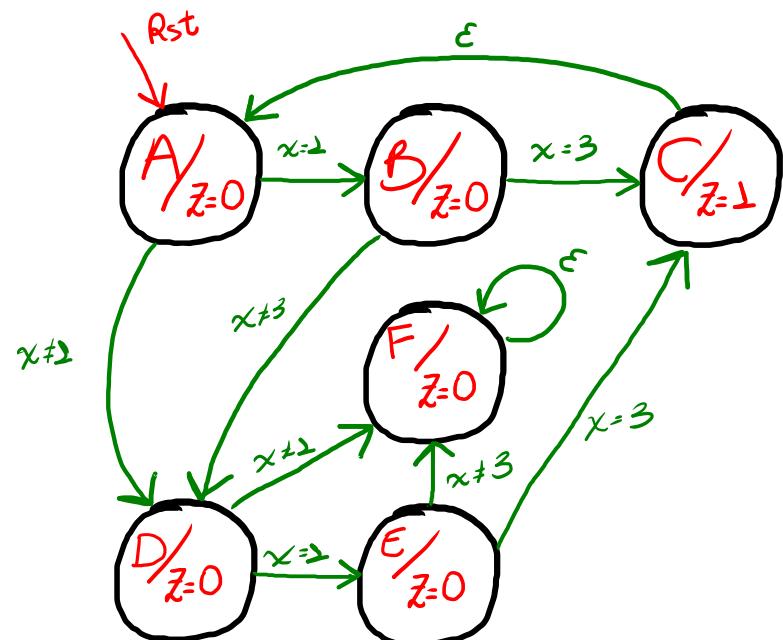
#FSM



Estado	Desc.
A	Reset
B	1 OK
C	13 OK
D	2 chance
E	$1 \text{ OK} [2 \text{ chance}]$
F	Trava

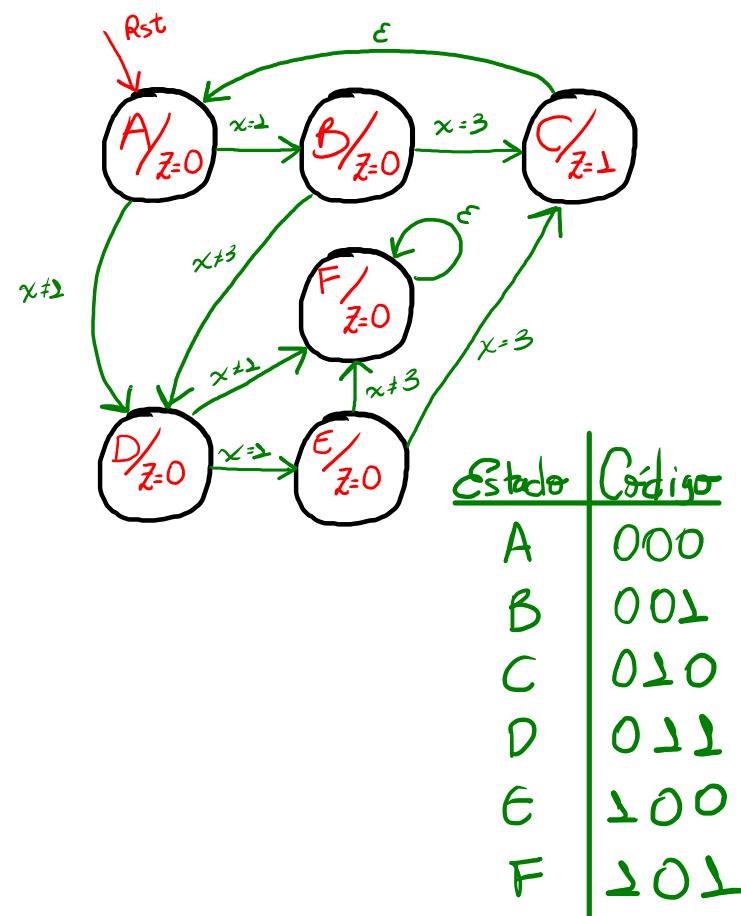
#Tabela de Transição

Estado Atual	Estado Próximo				Saída Z
	$x=0$	$x=1$	$x=2$	$x=3$	
A	D	B	D	D	0
B	D	D	D	C	0
C	A	A	A	A	1
D	F	E	F	F	0
E	F	F	F	C	0
F	F	F	F	F	0



#Tabela de Excitação pt. 2

Estado Atual	Estado Próximo				Saída Z
	$x=00$	$x=01$	$x=10$	$x=11$	
000	011	001	011	011	0
001	011	011	011	010	0
010	000	000	000	000	1
011	101	100	101	101	0
100	101	101	101	010	0
101	101	101	101	101	0



#Tabela de Excitação pt.2

(Próximo Estado com JK)
 $Q_2 Q_1 Q_0$

OK

NOK

Estado Atual	Estado Próximo				Saída Z	Q ₂		Q ₁		Q ₀		Q ₂		Q ₁		Q ₀	
	x=00	x=01	x=10	x=11		J ₂	K ₂	J ₁	K ₁	J ₀	K ₀	J ₂	K ₂	J ₁	K ₁	J ₀	K ₀
000	011	001	011	011	0	0	X	0	X	1	X	0	X	1	X	1	X
001	011	011	011	010	0	0	X	1	X	X	1	0	X	1	X	X	0
010	000	000	000	000	1	0	X	X	1	0	X	-	-	-	-	-	-
011	101	100	101	101	0	1	X	X	1	X	1	1	X	X	1	X	0
100	101	101	101	010	0	X	1	1	X	0	X	X	0	0	X	1	X
101	101	101	101	101	0	-	-	-	-	-	-	X	0	0	X	X	0

Q Atual	Q Próximo	J	K
00	0X	1	X
01	1X	X	1
10	X1	1	0
11	X0	0	X

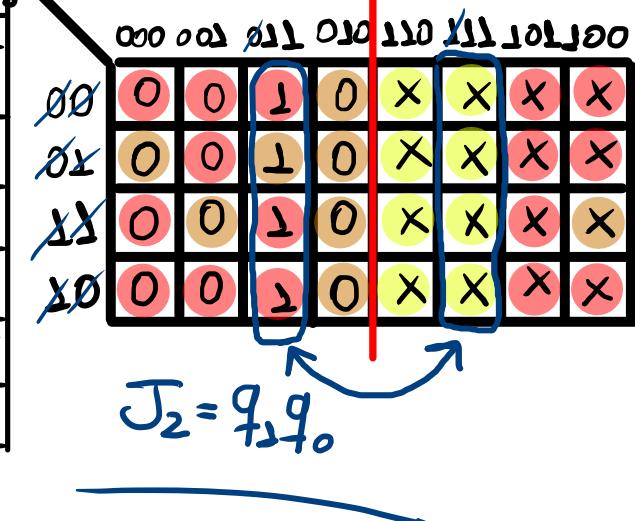
#Mapas de Karnaugh

OK NOK

Estado Atual	Estado Próximo				Saída Z	Q ₂		Q ₁		Q ₀		Q ₂		Q ₁		Q ₀	
	$x=00$	$x=01$	$x=10$	$x=11$		J ₂	K ₂	J ₁	K ₁	J ₀	K ₀	J ₂	K ₂	J ₁	K ₁	J ₀	K ₀
000	011	001	011	011	0	0	X	0	X	1	X	0	X	1	X	1	X
001	011	011	011	020	0	0	X	1	X	X	1	0	X	1	X	X	0
010	000	000	000	000	1	0	X	X	1	0	X	-	-	-	-	-	-
011	101	100	101	101	0	1	X	X	1	X	1	1	X	X	1	X	0
100	101	101	101	010	0	X	1	1	X	0	X	X	0	0	X	1	X
101	101	101	101	101	0	-	-	-	-	-	X	0	0	X	X	0	X

Entradas

$$q_2 q_1 q_0$$



$$J_2 = q_2 q_1 q_0$$

#Mapas de Karnaugh

Estado Atual	Estado Próximo				Saída Z	Q_2		Q_1		Q_0		Q_2		Q_1		Q_0	
	$x=00$	$x=01$	$x=10$	$x=11$		J_2	K_2	J_1	K_1	J_0	K_0	J_2	K_2	J_1	K_1	J_0	K_0
000	011	001	011	011	0	0	X	0	X	1	X	0	X	1	X	1	X
001	011	011	011	020	0	0	X	1	X	X	1	0	X	1	X	X	0
010	000	000	000	000	1	0	X	X	1	0	X	-	-	-	-	-	-
011	101	100	101	101	0	1	X	X	1	X	1	1	X	X	1	X	0
100	101	101	101	010	0	X	1	1	X	0	X	X	0	0	X	1	X
101	101	101	101	101	0	-	-	-	-	-	X	0	0	X	X	0	0

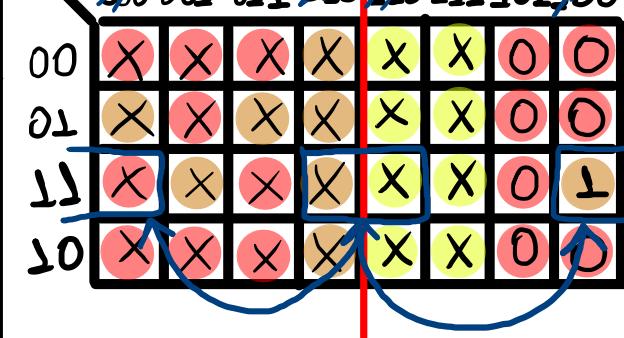
Entradas



$q_2 q_1 q_0$

NOK

OK



$$K_2 = \bar{q}_2 \bar{q}_0 \bar{q}_1$$

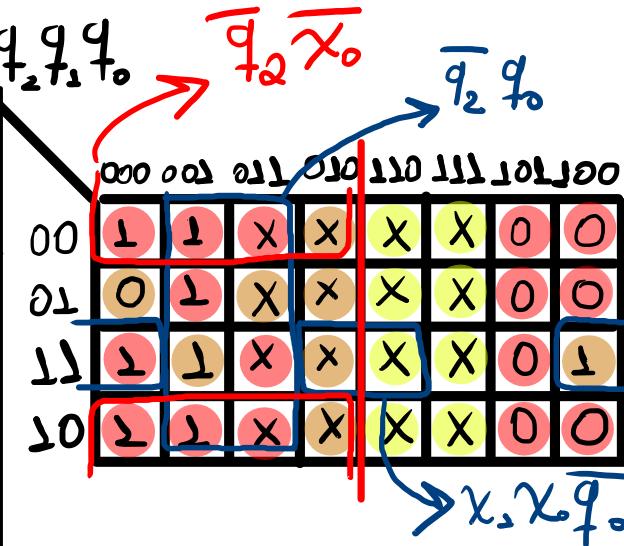
#Mapas de Karnaugh

Estado Atual	Estado Próximo				Saída Z	Q_2		Q_1		Q_0		Q_2		Q_1		X, Q_0	
	$x=00$	$x=01$	$x=10$	$x=11$		J_2	K_2	J_1	K_1	J_0	K_0	J_2	K_2	J_1	K_1	J_0	K_0
000	011	001	011	011	0	0	X	0	X	1	X	0	X	1	X	1	X
001	011	011	011	020	0	0	X	1	X	X	1	0	X	1	X	X	0
010	000	000	000	000	1	0	X	X	1	0	X	-	-	-	-	-	-
011	101	100	101	101	0	1	X	X	1	X	1	1	X	X	1	X	0
100	101	101	101	010	0	X	1	1	X	0	X	X	0	0	X	1	X
101	101	101	101	101	0	-	-	-	-	-	X	0	0	X	X	0	0

Entradas

✓ ✓ ↑ ✓ ✓ ↑

OK NOK



$$J_2 = \bar{q}_2 \bar{x}_0 + \bar{q}_2 q_0 + x_2 x_0 \bar{q}_0$$

$$J_2 = \bar{q}_2 (\bar{x}_0 + q_0) + x_2 x_0 \bar{q}_0$$

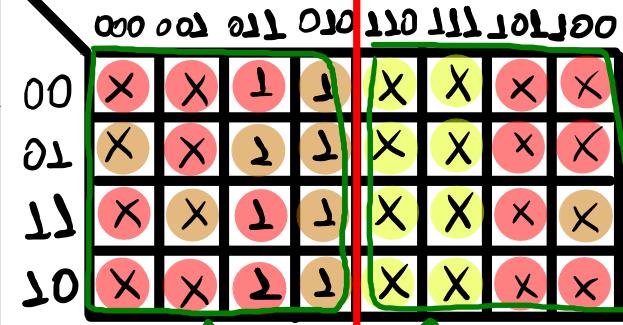
#Mapas de Karnaugh

Estado Atual	Estado Próximo				Saída Z	Q_2		Q_1		Q_0		Q_2		Q_1		Q_0	
	$x=00$	$x=01$	$x=10$	$x=11$		J_2	K_2	J_1	K_1	J_0	K_0	J_2	K_2	J_1	K_1	J_0	K_0
000	011	001	011	011	0	0	X	0	X	1	X	0	X	1	X	1	X
001	011	011	011	020	0	0	X	1	X	X	1	0	X	1	X	X	0
010	000	000	000	000	1	0	X	X	1	0	X	-	-	-	-	-	-
011	101	200	101	101	0	1	X	X	1	X	1	1	X	X	1	X	0
100	101	101	101	010	0	X	1	1	X	0	X	X	0	0	X	1	X
101	101	101	101	101	0	-	-	-	-	-	X	0	0	X	X	0	

Entradas

✓ ✓ ✓ ↑ ✓ ✓ ✓ ↑

$q_2 q_1 q_0$



$K_1 = 1$

#Mapas de Karnaugh

Estado Atual	Estado Próximo				Saída Z	Q_2		Q_1		Q_0		Q_2		Q_1		Q_0	
	$x=00$	$x=01$	$x=10$	$x=11$		J_2	K_2	J_1	K_1	J_0	K_0	J_2	K_2	J_1	K_1	J_0	K_0
000	011	001	011	011	0	0	X	0	X	1	X	0	X	1	X	1	X
001	011	011	011	020	0	0	X	1	X	X	1	0	X	1	X	X	0
010	000	000	000	000	1	0	X	X	1	0	X	-	-	-	-	-	-
011	101	100	101	101	0	1	X	X	1	X	1	1	X	X	1	X	0
100	101	101	101	010	0	X	1	1	X	0	X	X	0	0	X	1	X
101	101	101	101	101	0	-	-	-	-	-	X	0	0	X	X	0	X

Entradas

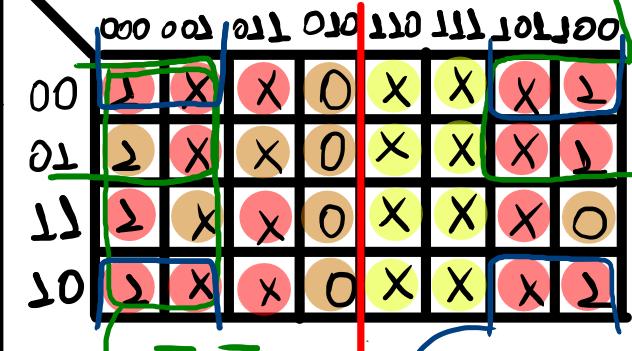
✓ ✓ ✓ ✓ ↑ ✓ ✓ ✓ ✓ ↑

OK

NOK

$\bar{q}_2 q_2 \bar{q}_1$

$\bar{q}_1 \bar{q}_2$



$\bar{q}_2 \bar{q}_1$

$\bar{q}_1 \bar{x}_0$

$$J_0 = \bar{q}_2 \bar{q}_1 + \bar{q}_2 \bar{x}_0 + \bar{q}_1 \bar{x}_0$$

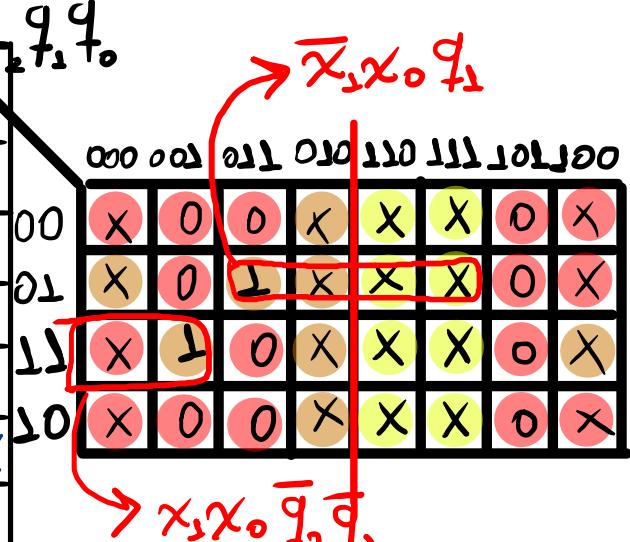
$$J_0 = \overline{\bar{q}_2} (\bar{q}_2 + \bar{x}_0 + \bar{x}_1) \quad (\text{NAND})$$

#Mapas de Karnaugh

OK NOK

Estado Atual	Estado Próximo				Saída Z	Q_2		Q_1		Q_0		Q_2		Q_1		Q_0	
	$x=00$	$x=01$	$x=10$	$x=11$		J_2	K_2	J_1	K_1	J_0	K_0	J_2	K_2	J_1	K_1	J_0	K_0
000	011	001	011	011	0	0	X	0	X	1	X	0	X	1	X	1	X
001	011	011	011	010	0	0	X	1	X	X	1	0	X	1	X	X	0
010	000	000	000	000	1	0	X	X	1	0	X	-	-	-	-	-	-
011	101	100	101	101	0	1	X	X	1	X	1	1	X	X	1	X	0
100	101	101	101	010	0	X	1	1	X	0	X	X	0	0	X	1	X
101	101	101	101	101	0	-	-	-	-	-	X	0	0	X	X	0	X

Entradas



$$K_0 = \overline{X}_1X_0Q_1 + X_1X_0\bar{Q}_1$$

$$K_0 = X_0(\overline{X}_1Q_1 + X_1\bar{Q}_1)$$

↳ Expressões:

$$\hookrightarrow J_2 = \frac{q_2 q_0}{\bar{q}_0}$$

$$\hookrightarrow K_2 = \chi_2 \chi_0 \bar{q}_0$$

$$\hookrightarrow J_2 = \bar{q}_2 (\bar{x}_0 + q_0) + x_2 x_0 \bar{q}_0$$

$$\hookrightarrow K_2 = 1$$

$$\hookrightarrow J_0 = \bar{q}_1 (\bar{q}_2 + \bar{x}_0 + \bar{x}_2)$$

$$\hookrightarrow K_0 = \chi_0 (\bar{x}_1 q_1 + x_1 \bar{q}_2 \bar{q}_2)$$