

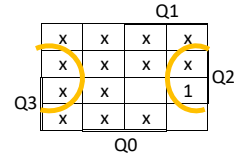
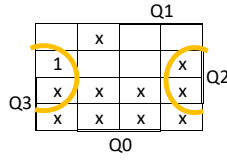
Feladat: szjmm80 0->3->2->5->7->4->10->15->14->0

mi	Q3n	Q2n	Q1n	Q0n	Q3n+1	Q2n+1	Q1n+1	Q0n+1	J3	K3	J2	K2	J1	K1	J0	K0	D3	D2	D1	D0	L	UP
0	0	0	0	0	0	0	0	0	1	0	x	x	x	x	1	0	0	1	1	1	1	x
1	0	0	0	0	1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
2	0	0	1	0	0	0	1	0	1	0	x	1	x	1	1	x	0	1	0	1	1	x
3	0	0	1	1	0	0	0	1	0	0	x	0	x	0	x	1	0	0	1	0	0	0
4	0	1	0	0	0	1	0	0	0	1	x	1	1	0	x	1	0	1	0	1	0	1
5	0	1	0	1	0	1	0	1	1	1	0	x	x	0	1	x	0	0	1	1	1	1
6	0	1	1	0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7	0	1	1	1	0	0	1	0	0	0	x	0	x	1	x	1	0	1	0	0	0	1
8	1	0	0	0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
9	1	0	0	1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10	1	0	1	0	1	0	1	1	1	1	x	0	1	x	0	1	x	1	1	1	1	1
11	1	0	1	1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
12	1	1	0	0	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
13	1	1	0	1	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
14	1	1	1	0	0	0	0	0	0	x	1	x	1	x	0	x	0	0	0	0	0	1
15	1	1	1	1	1	1	1	1	1	0	x	0	x	0	x	0	x	1	1	1	0	0

$$J_3 = K_3 = Q_2 * \overline{Q_0}$$

J	K	Q'
0	0	Q
0	1	0
1	0	1
1	1	Q

Qn	Qn+1	J	K
0	→	0	X
0	→	1	1
1	→	0	X
1	→	1	0



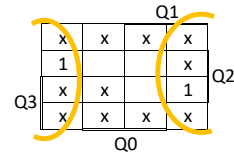
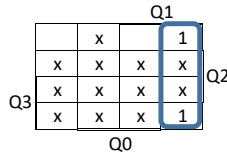
Inputs						Outputs				
CLR	L	CE	C	UP	Dn-D0	Qz-Q0	TC	CEO		
1	X	X	X	X	X	0	0	0		
0	1	X	1	X	Dn	Dn	TC	CEO		
0	0	0	X	X	X	No change	No change	0		
0	0	1	1	1	X	Inc	TC	CEO		
0	0	1	1	0	X	Dec	TC	CEO		

Z = bit width - 1
 TC = ((Qz-Q0-1)*Q[n-2]*...*Q[0]UP) + ((Qz-Q0-1)*Q[n-2]*...*Q[0]DP)
 CEO = TC+CE

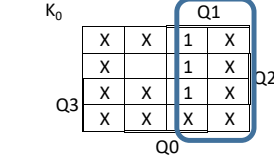
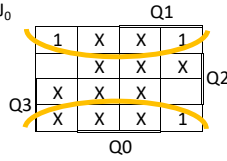
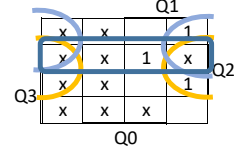
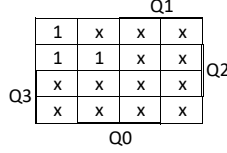
D3	D2	D1	D0	L	UP
0	0	1	1	1	x
x	x	x	x	x	x
0	1	0	1	1	x
x	x	x	0	0	0
1	0	1	0	1	x
0	1	1	1	1	x
x	x	x	x	x	x
0	1	0	1	1	x
x	x	x	x	x	x
0	0	0	1	x	0
x	x	x	x	x	x
1	1	1	1	1	x
x	x	x	x	x	x
0	0	0	1	x	0
x	x	x	x	x	x

$$J_2 = Q_1 * \overline{Q_0}$$

$$K_2 = \overline{Q_0}$$



$$J_1 = 1 \quad K_1 = \overline{Q_3} * Q_2 + Q_2 * \overline{Q_0} + \overline{Q_3} * \overline{Q_0}$$



$$J_0 = \overline{Q_2}$$

$$K_0 = Q_1$$

Feladatleír: https://macsiola.it.uni-miskolc.hu/~yvain/digitalis/forrendi_halmazatok_kovetelmeny.doc
 Sémaképek: <https://www.falstad.com/circuit/>