Curs Proiectare logică 13

Pt ∀ stare (S), ∃ o singură tranziţie NUMĂRĂTOARE
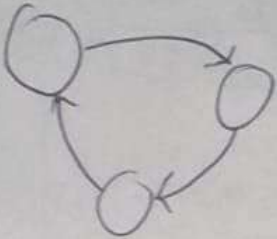
∃ mai multor ieşiri implică (∃) unei variabile de ramificaţ

$X = 1$

$X = 0$
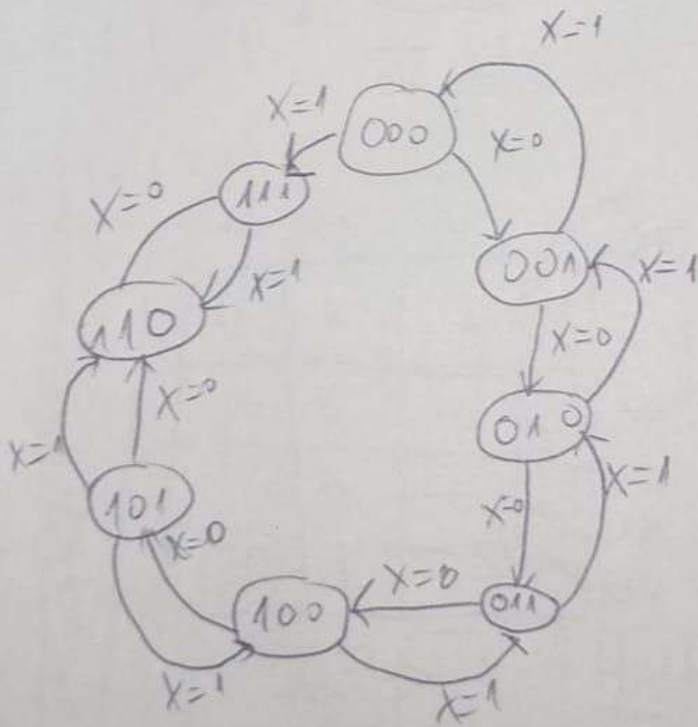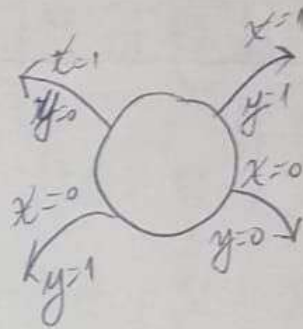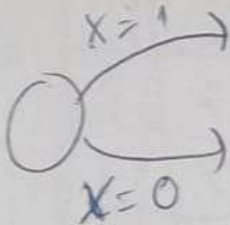
#	X	Q_2	Q_1	Q_0	Q_2'	Q_1'	Q_0'
0	0	0	0	0	0	0	1
1	0	0	0	1	0	1	0
2	0	0	1	0	0	1	1
3	0	0	1	1	1	0	0
4	0	1	0	0	1	0	1
5	0	1	0	1	1	1	0
6	0	1	1	0	1	1	1
7	0	1	1	1	0	0	0
8	1	0	0	0	1	1	1
9	1	0	0	1	0	0	0
10	1	0	1	0	0	0	1
11	1	0	1	1	0	1	0
12	1	1	0	0	0	1	1
13	1	1	0	1	1	0	0
14	1	1	1	0	1	0	1
15	1	1	1	1	1	1	0

a) $B = Q_2' = \overline{X} Q_2 \overline{Q_1} + Q_2 Q_1 \overline{Q_0} +$
$X Q_2 Q_0 +$
$X \overline{Q_2} Q_1 \overline{Q_0} +$
$+ \overline{X} \overline{Q_2} Q_1 Q_0$

$X Q_2$ / $Q_1 Q_0$

	00	01	11	10
00	0	1	0	1
01	0	1	1	0
11	1	0	1	0
10	0	1	1	0

$A = Q_1' = X(\overline{Q_1}\,\overline{Q_0} + Q_1 Q_0) + \overline{X}(\overline{Q_1}Q_0 + Q_1\overline{Q_0})$
$= X \oplus Q_1 \oplus Q_0$

$X Q_2$ / $Q_1 Q_0$

	00	01	11	10
00	0	0	1	1
01	1	1	0	0
11	0	0	1	1
10	1	1	0	0

$D_0 = Q_0' = \overline{Q_0}$

$X Q_2$ / $Q_1 Q_0$

	00	01	11	10
00	1	1	1	1
01	0	0	0	0
11	0	0	0	0
10	1	1	1	1

X	Q_2	Q_1	Q_0	Q_2'	Q_1'	Q_0'	J_2	K_2	J_1	K_1	J_0	K_0
0	0	0	0	0	0	1	0	X	0	X	1	X
0	0	0	1	0	1	1	0	X	1	X	X	1
0	0	1	1	0	0	1	0	X	X	1	X	1
0	0	1	1	0	1	1	0	X	X	0	X	1
0	1	0	0	1	1	0	X	0	1	X	X	1
0	1	0	0	1	1	0	X	0	1	X	1	X
0	1	1	1	1	1	0	X	0	X	1	X	1
1	0	0	0	1	1	1	1	X	0	X	1	X
1	0	0	1	0	0	0	0	X	0	X	X	1
1	0	0	1	0	0	1	0	X	1	X	X	1
1	0	1	1	0	0	0	0	X	X	1	X	1
1	1	0	0	0	1	1	X	1	0	X	1	X
1	1	1	0	0	0	1	X	1	X	1	0	X
1	1	1	1	1	1	1	X	0	X	1	X	1
1	1	1	1	1	1	1	X	0	X	1	X	1

T_2	T_1	T_0
0	0	1
0	1	1
0	0	1
1	1	1
0	0	1
0	1	1
0	0	1
1	1	1
1	1	1
1	0	1
0	1	1
0	0	1
1	1	1
0	1	1
0	1	1

Circuit (logic diagram): inputs X, Q_2, Q_1, Q_0, CLK; gates labeled $\&$, $=1$, 1; flip-flops 2, 1, 0 each with Q and $\bar{Q}$ outputs (T-type).
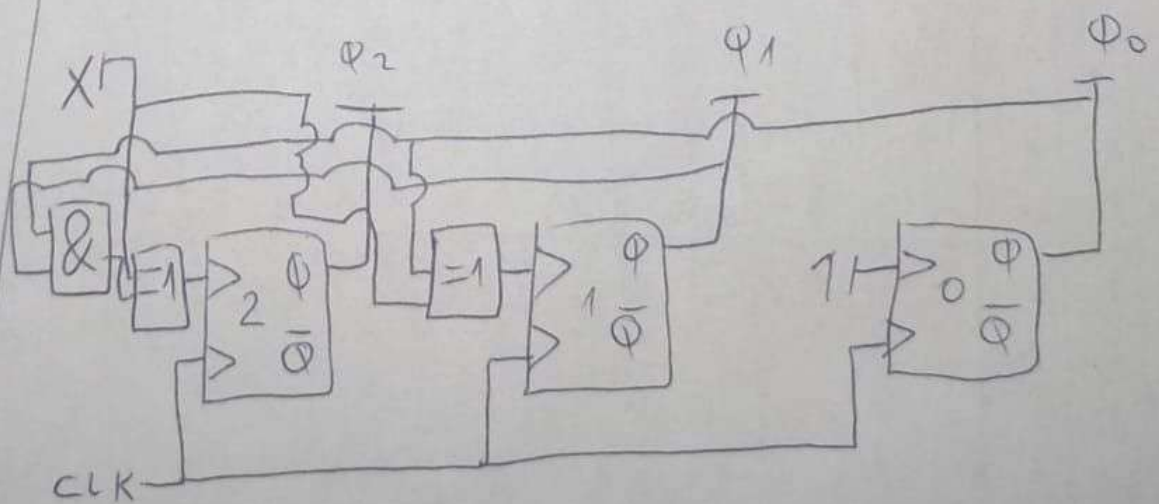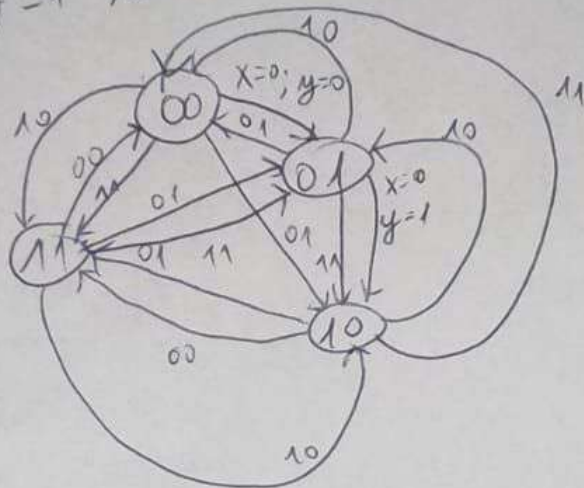
3 BB JK,

$x=0; y=0; 0-1-2-3-0$

$x=0; y=1; 0-2-3-1-0$

$x=1; y=0; 0-3-2-1-0$

$x=1; y=1; 0-3-1-2-0$

X	y	Q_1	Q_0	Q_1'	q_0'	J_1	K_1	J_0	K_0
0	0	0	0	0	1	0	X	1	X
0	0	0	1	1	0	0	X	X	1
0	0	1	0	1	1	1	0	1	X
0	0	1	1	1	0	1	0	X	1
0	1	0	0	1	0	1	X	0	X
0	1	0	1	1	0	0	X	X	1
0	1	1	0	0	1	X	0	1	X
0	1	1	1	0	1	1	X	X	0
1	0	0	0	1	1	1	X	1	X
1	0	0	1	0	0	X	0	X	1
1	0	1	0	0	1	X	0	1	X
1	0	1	1	1	0	X	1	X	1
1	1	0	0	1	1	X	0	1	X
1	1	0	1	1	0	X	0	X	1
1	1	1	0	0	0	X	1	0	X
1	1	1	1	0	1	X	0	X	0