

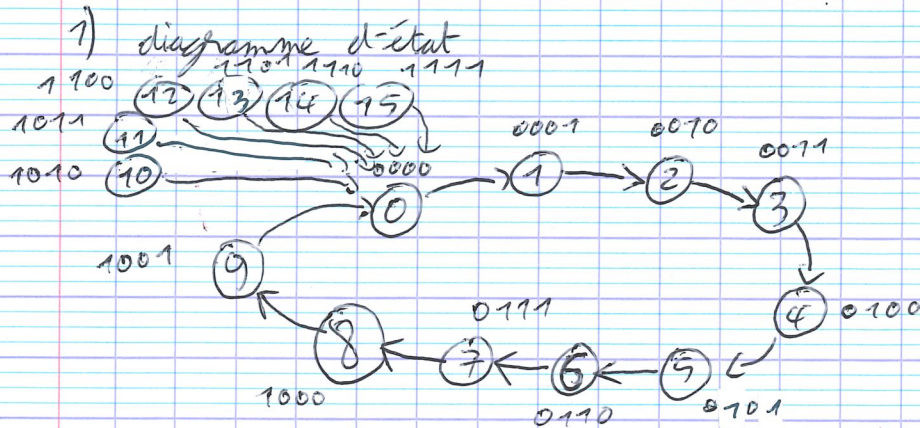
BURTIN

Nicolas

STADBACK II Machine à états

Benjamin 1) Réalisation d'un compteur modulo 10

MIQ 3



2)

états présents					états futurs									
D_3	D_2	D_1	D_0		D_3'	D_2'	D_1'	D_0'		D_3'	D_2'	D_1'	D_0'	
0	0	0	0	0	0	0	0	1		00	00	01	11	10
1	0	0	0	1	0	0	1	0		01	1	0	0	1
2	0	0	1	0	0	0	1	1		11	0	0	0	0
3	0	0	1	1	0	1	0	0		10	1	0	0	0
4	0	1	0	0	0	1	0	1						
5	0	1	0	1	0	1	1	0						
6	0	1	1	0	0	1	1	1						
7	0	1	1	1	1	0	0	0						
8	1	0	0	0	1	0	0	1						
9	1	0	0	1	0	0	0	0		00	0	1	0	1
10	1	0	1	0	0	0	0	0		01	0	1	0	1
11	1	0	1	1	0	0	0	0		11	0	0	0	0
12	1	1	0	0	0	0	0	0		10	0	0	0	0
13	1	1	0	1	0	0	0	0						
14	1	1	1	0	0	0	0	0						
15	1	1	1	1	0	0	0	0						

$$D_0' = \overline{D_3} \overline{D_0} + \overline{D_1} \overline{D_0} \overline{D_2}$$

$$\begin{aligned} D_1' &= \overline{D_3} \overline{D_1} D_0 + \overline{D_3} D_1 \overline{D_0} \\ &= \overline{D_3} (\overline{D_1} D_0 + D_1 \overline{D_0}) \\ &= \overline{D_3} (D_1 \oplus D_0) \end{aligned}$$

$D_3 \backslash D_2$	00	01	11	10
00	0	0	1	0
01	1	1	0	1
11	0	0	0	0
10	0	0	0	0

$$D_2' = \bar{D}_3 D_2 \bar{D}_1 + \bar{D}_3 D_2 \bar{D}_0 + D_1 D_0 \bar{D}_3 \bar{D}_2$$

$D_3 \backslash D_2$	00	01	11	10
00	0	0	0	0
01	0	0	1	0
11	0	0	0	0
10	1	0	0	0

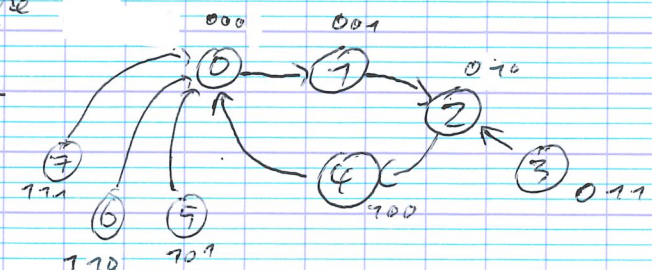
$$D_3' = D_0 D_1 D_2 \bar{D}_3 + \bar{D}_0 \bar{D}_1 \bar{D}_2 D_3$$

2) Réalisation d'un compteur en anneau

1) 3 bascules JK 3bit

état présent état future

$Q_2 \ Q_1 \ Q_0$	$Q_2 \ Q_1 \ Q_0$
0 0 0	0 0 1
1 0 0	0 1 0
2 0 1 0	1 0 0
3 0 1 1	0 1 0
4 1 0 0	0 0 0
5 1 0 1	0 0 0
6 1 1 0	0 0 0
7 1 1 1	0 0 0



$Q_2 \backslash Q_1 \ Q_0$	00	01	11	10
0	0	1	0	0
1	0	0	0	0

$Q_2 \backslash Q_1 \ Q_0$	00	01	11	10
0	X	1	1	X
1	X	1	1	X

$$J_0 = \bar{Q}_2 \bar{Q}_1$$

$Q_2 \backslash Q_1 \ Q_0$	00	01	11	10
0	0	1	1	0
1	0	0	0	0

$Q_2 \backslash Q_1 \ Q_0$	00	01	11	10
0	0	0	1	X
1	0	0	X	X

$$J_1 = \bar{Q}_2 \bar{Q}_0$$

$$K_1 = Q_1 \bar{Q}_0 + Q_2 Q_1 \quad K_0 = Q_0$$

$Q_2 \backslash Q_1 \ Q_0$	00	01	11	10
0	0	0	0	1
1	0	0	0	0

$Q_2 \backslash Q_1 \ Q_0$	00	01	11	10
0	0	0	0	1
1	X	X	X	X

$Q_2 \backslash Q_1 \ Q_0$	00	01	11	10
0	X	X	X	X
1	1	1	1	1

$$J_2 = Q_1 \bar{Q}_0 \quad K_2 = Q_2$$

J	K	$Q_n \rightarrow \bar{Q}_n$
0	0	$Q_{n-1} \bar{Q}_{n-1}$
0	1	0 1
1	0	1 0
1	1	$\bar{Q}_{n-1} Q_{n-1}$

$$Si \ Q_{n-1} = 0 \quad J = 0 \quad K = X$$

$$Si \ Q_{n-1} = 1 \quad K = 0 \quad J = X$$