

Q.1 a)

Assignment des Bascules : "simplest"

INIT	000
X1	001
X2	010
X3	011
X4	100
OK	101

Diagramme d'états

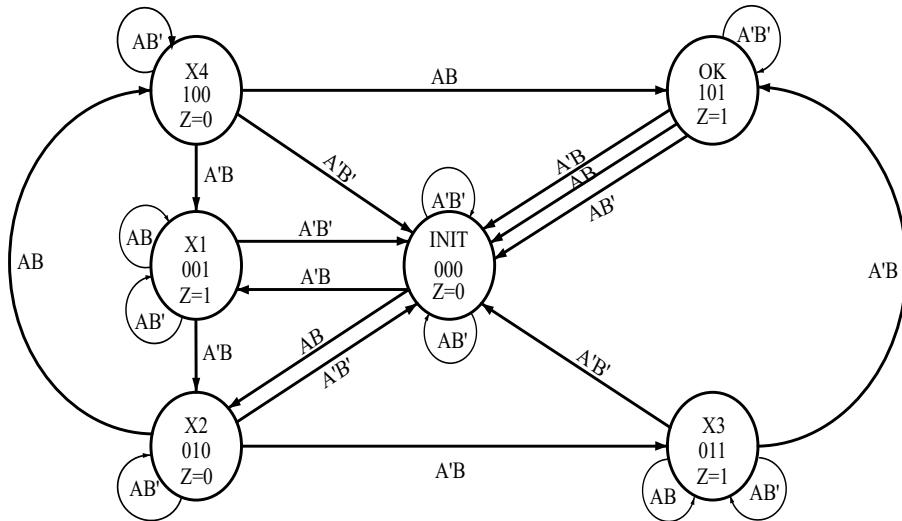


FIGURE 1

Table de transitions

Q2, Q1, Q0	AB				Z
	00	01	11	10	
000	000	001	010	000	0
001	000	010	001	001	1
010	000	011	100	010	0
011	000	101	011	011	1
100	000	001	101	100	0
101	101	000	000	000	1
	Q2*Q1*Q0*				

Tables de Karnaugh des Bascules (Combinatoire)

Q2*

		$\overline{Q_2 Q_1 Q_0} \quad \overline{Q_2 Q_1 Q_0} \quad \overline{Q_2} Q_1 Q_0 \quad \overline{Q_2} Q_1 \overline{Q_0} \quad Q_2 Q_1 \overline{Q_0} \quad Q_2 Q_1 Q_0 \quad Q_2 \overline{Q_1} Q_0 \quad Q_2 \overline{Q_1} Q_0$								
		$\overline{A}\overline{B}$	0	0	0	0	X	X	1	0
		$\overline{A}B$	0	0	1	0	X	X	0	0
		$A\overline{B}$	0	0	0	1	X	X	0	1
		$A\overline{B}$	0	0	0	0	X	X	0	1

FIGURE 2 – $Q2^*(A, B, Q2, Q1, Q0) = A'B'Q2Q0 + A'BQ1Q0 + AQ2Q0' + ABQ1Q0'$ **Q1***

		$\overline{Q_2 Q_1 Q_0} \quad \overline{Q_2 Q_1 Q_0} \quad \overline{Q_2} Q_1 Q_0 \quad \overline{Q_2} Q_1 \overline{Q_0} \quad Q_2 Q_1 \overline{Q_0} \quad Q_2 Q_1 Q_0 \quad Q_2 \overline{Q_1} Q_0 \quad Q_2 \overline{Q_1} Q_0$								
		$\overline{A}\overline{B}$	0	0	0	0	X	X	0	0
		$\overline{A}B$	0	1	0	1	X	X	0	0
		$A\overline{B}$	1	0	1	0	X	X	0	0
		$A\overline{B}$	0	0	1	1	X	X	0	0

FIGURE 3 – $Q1^*(A, B, Q2, Q1, Q0) = A'BQ2'Q1'Q0 + A'BQ1Q0' + AB'Q1 + ABQ2'Q1'Q0' + AQ1Q0$ **Q0***

		$\overline{Q_2 Q_1 Q_0} \quad \overline{Q_2 Q_1 Q_0} \quad \overline{Q_2} Q_1 Q_0 \quad \overline{Q_2} Q_1 \overline{Q_0} \quad Q_2 Q_1 \overline{Q_0} \quad Q_2 Q_1 Q_0 \quad Q_2 \overline{Q_1} Q_0 \quad Q_2 \overline{Q_1} Q_0$								
		$\overline{A}\overline{B}$	0	0	0	0	X	X	1	0
		$\overline{A}B$	1	0	1	1	X	X	0	1
		$A\overline{B}$	0	1	1	0	X	X	0	1
		$A\overline{B}$	0	1	1	0	X	X	0	0

FIGURE 4 – $Q0^*(A, B, Q2, Q1, Q0) = A'B'Q2Q0 + A'BQ0' + AQ2'Q0 + BQ2Q0' + A'BQ1$

Q1 b)**Table de transitions**

			AB				Z
Q2	Q1	Q0	00	01	11	10	
111	111	110	010	111	0		
011	111	010	011	011	1		
010	111	001	000	010	0		
001	111	100	001	001	1		
000	111	011	100	000	0		
100	100	111	111	111	1		
			Q2*Q1*Q0*				

Tables de Karnaugh des Bascules (Combinatoire) b)

Dans les états indéfinis (001,101), nous revenons à l'état initial (tout à 1) afin de minimiser les risques.

Q2*

		$\overline{Q_2 Q_1 Q_0} \quad \overline{Q_2 Q_1 Q_0} \quad \overline{Q_2} Q_1 Q_0 \quad \overline{Q_2} Q_1 \overline{Q_0} \quad Q_2 Q_1 \overline{Q_0} \quad Q_2 Q_1 Q_0 \quad Q_2 \overline{Q_1} Q_0 \quad Q_2 \overline{Q_1} \overline{Q_0}$							
		$\overline{A}\overline{B}$	1	1	1	1	1	1	1
		$\overline{A}B$	0	1	0	0	1	1	1
		$A\overline{B}$	1	0	0	0	1	0	1
		$A\overline{B}$	0	0	0	0	1	1	1

FIGURE 5 – $Q2^*(A, B, Q2, Q1, Q0) = A'B' + A'Q1'Q0 + A'Q2 + B'Q2 + ABQ1'Q0' + Q2Q1' + Q2Q0'$

Q1*

		$\overline{Q_2 Q_1 Q_0} \quad \overline{Q_2 Q_1 Q_0} \quad \overline{Q_2} Q_1 Q_0 \quad \overline{Q_2} Q_1 \overline{Q_0} \quad Q_2 Q_1 \overline{Q_0} \quad Q_2 Q_1 Q_0 \quad Q_2 \overline{Q_1} Q_0 \quad Q_2 \overline{Q_1} \overline{Q_0}$								
		$\overline{A}\overline{B}$	1	1	1	1	1	1	1	0
		$\overline{A}B$	1	0	1	0	1	1	1	1
		$A\overline{B}$	0	0	1	0	1	1	1	1
		$A\overline{B}$	0	0	1	1	1	1	1	1

FIGURE 6 – $Q1^*(A, B, Q2, Q1, Q0) = Q1Q0 + B'Q1 + AQ2 + A'Q2'Q1'Q0' + A'B'Q0 + BQ2$

Q0*

		$\overline{Q_2}Q_1Q_0 \quad Q_2\overline{Q_1}Q_0 \quad \overline{Q_2}Q_1Q_0 \quad \overline{Q_2}\overline{Q_1}\overline{Q_0} \quad Q_2Q_1\overline{Q_0} \quad Q_2Q_1Q_0 \quad Q_2\overline{Q_1}Q_0 \quad Q_2\overline{Q_1}\overline{Q_0}$							
		1	1	1	1	1	1	1	0
$\overline{A}B$		1	0	0	1	1	0	1	1
$A\overline{B}$		0	1	1	0	1	0	1	1
$A\overline{B}$		0	1	1	0	1	1	1	1

FIGURE 7 – $Q0^*(A, B, Q2, Q1, Q0) = AQ2'Q0 + A'B'Q2' + Q2Q1'Q0 + B'Q2Q1 + A'BQ0' + AQ2Q0'$