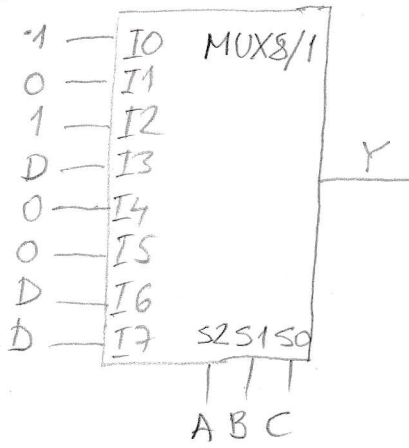


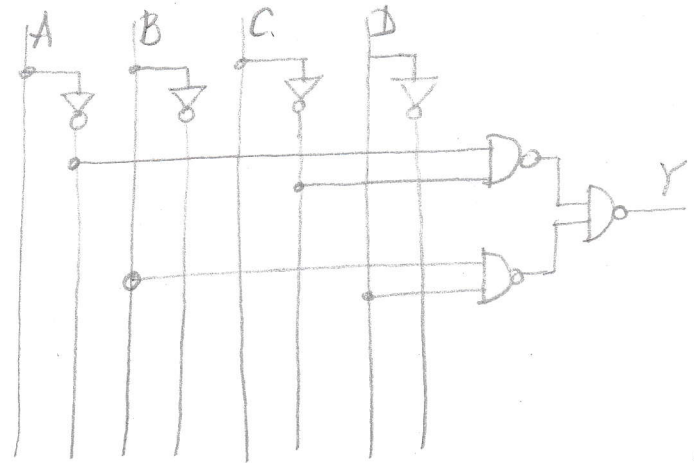
①



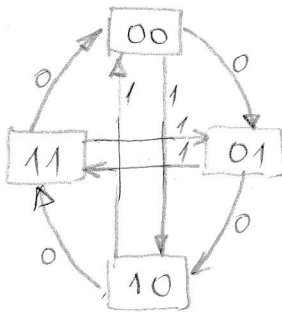
		CD			
		00	01	11	10
AB	00	1	1		
	01	1	1	1	
	11		1	1	
	10				

$$Y = \bar{A} \cdot \bar{C} + B \cdot D$$

A	B	C	D	Y
0	0	0	0	1
0	0	0	1	1
0	0	1	0	0
0	0	1	1	0
0	1	0	0	1
0	1	0	1	1
0	1	1	0	0
0	1	1	1	1
1	0	0	0	0
1	0	0	1	0
1	0	1	0	0
1	0	1	1	0
1	1	0	0	0
1	1	0	1	1
1	1	1	0	0
1	1	1	1	1



②



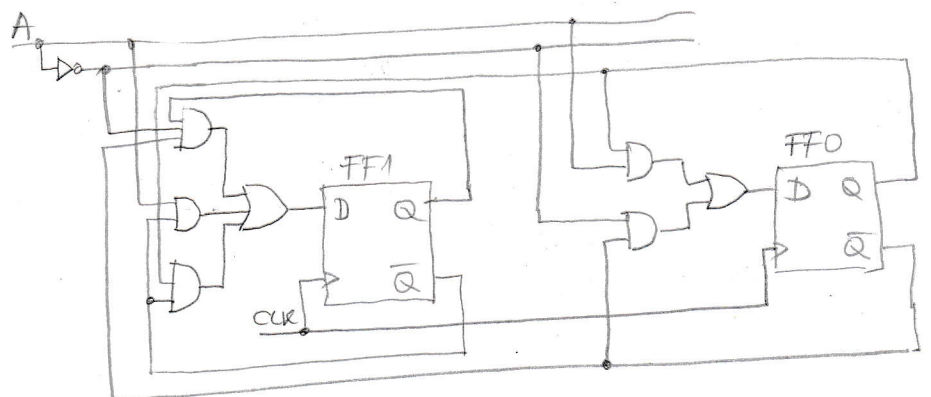
		Q1 Q0			
		00	01	11	10
A	0		1		1
	1	1	1		

$$D1 = Q1(n+1) = A \bar{Q1} + \bar{Q1} Q0 + \bar{A} Q1 \bar{Q0}$$

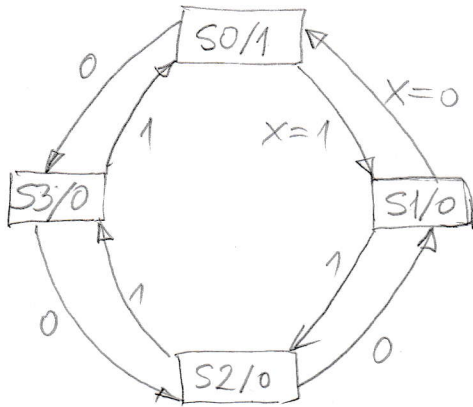
		Q1 Q0			
		00	01	11	10
A	0	1			1
	1		1	1	

$$D0 = Q0(n+1) = \bar{A} \bar{Q0} + A Q0$$

	n		n+1	
A	Q1	Q0	Q1	Q0
0	0	0	0	1
0	0	1	1	0
0	1	0	1	1
0	1	1	0	0
1	0	0	1	0
1	0	1	1	1
1	1	0	0	0
1	1	1	0	1



③



$X=1 \rightarrow$ 2 bit up-counter, Gray code
 $X=0 \rightarrow$ 2 bit down-counter, Gray code

For $S0 \rightarrow y=1$

④

