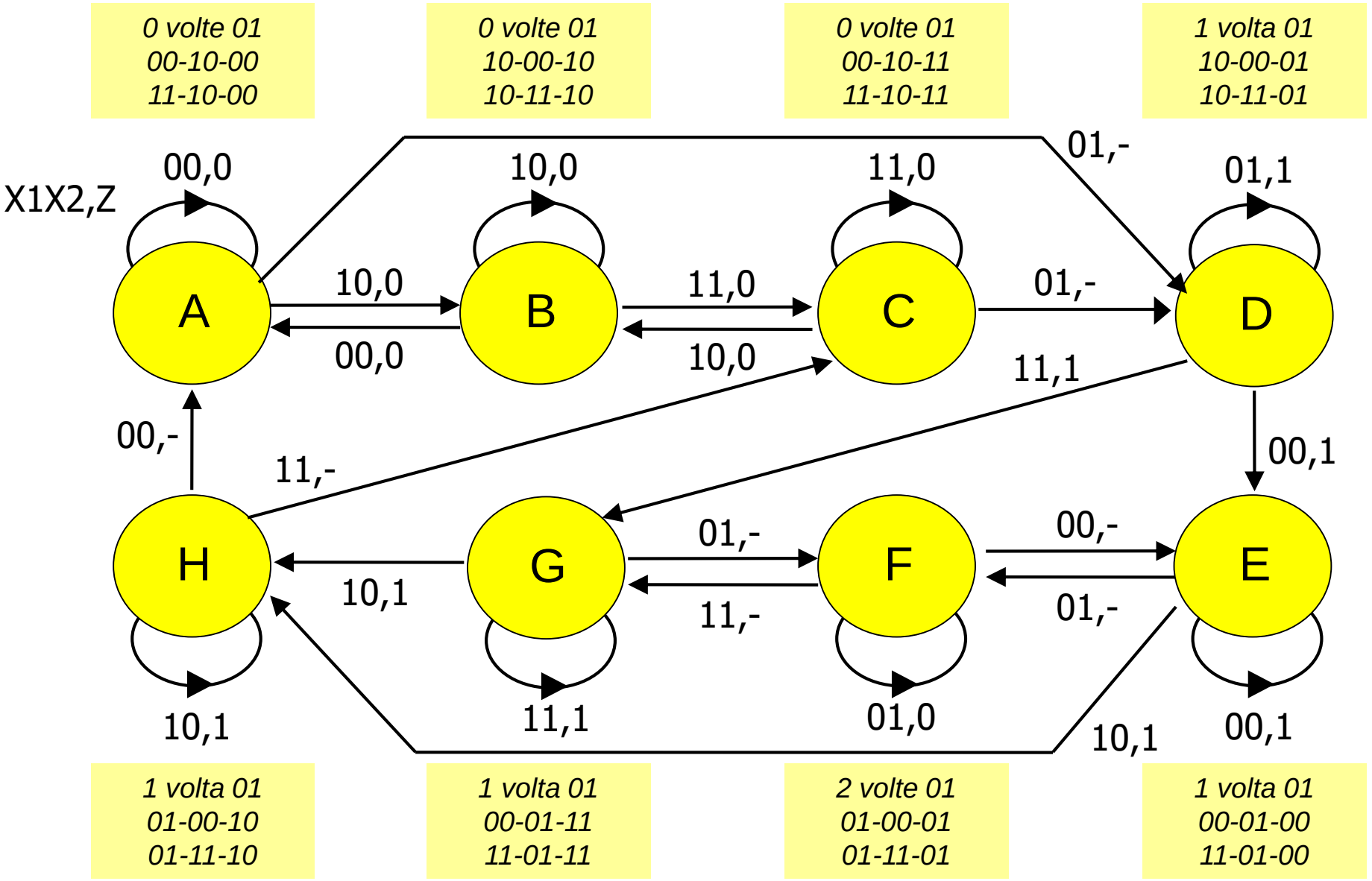
Esercizio 1.1



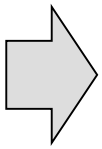
Esercizio 1.2 – Tabella triangolare e CMC

s.p. \ X1 X2	00	01	11	10
A	A,0	D,-	-,-	B,0
B	A,0	-,-	C,0	B,0
C	-,-	D,-	C,0	B,0
D	E,1	D,1	G,1	-,-
E	E,1	F,-	-,-	H,1
F	E,-	F,0	G,-	-,-
G	-,-	F,-	G,1	H,1
H	A,-	-,-	C,-	H,1

s.f., Z

B							
C							
D	/	/	/				
E	/	/	/	DF			
F	AE DF	AE CG	DF CG	/			
G	/	/	/	DF			
H	/	/	/	AE CG	AE	AE CG	CG
	A	B	C	D	E	F	G

AB,AC,BC,D,EF,EG,FG,H



a={ABC}, b={D},
c={EFG}, h={H}

Esercizio 1.2 – Tabella triangolare e CMC

s.p.	AB 00	01	11	10
a=ABC	a,0	b,-	a,0	a,0
b = D	c,1	b,1	c,1	-,-
c = EFG	c,1	c,0	c,1	d,1
d = H	a,-	-,-	a,-	d,1

s.f., Z

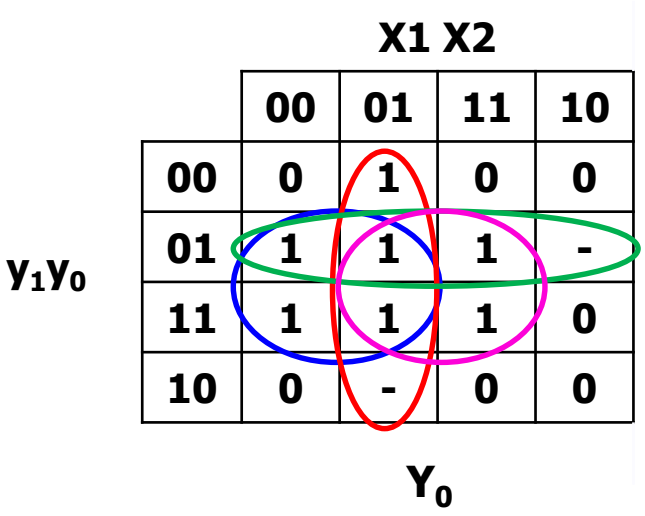
Esercizio 1.3 – Grafo adiacenze e TdT

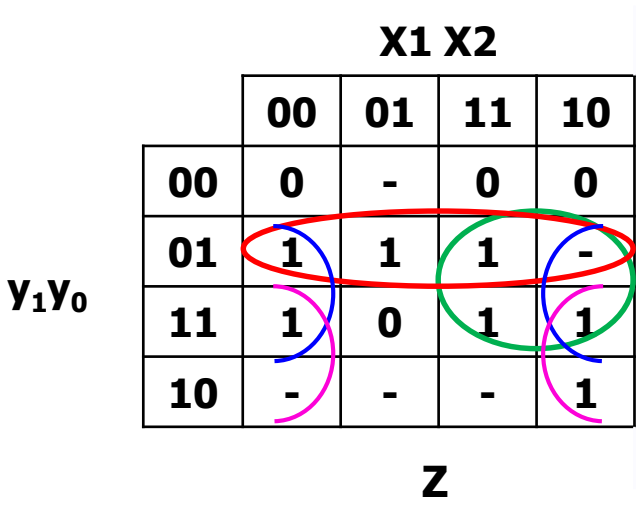
Z	0		1
0	**a**	→	**b**
	↑		↓
1	**d**	←	**c**

s.p. \ AB	00	01	11	10
a=00	00,0	01,-	00,0	00,0
b = 01	11,1	01,1	11,1	-,-
c = 11	11,1	11,0	11,1	10,1
d = 10	00,-	-,-	00,-	10,1

s.f., Z

Esercizio 1.4 – Mappe di Karnaugh

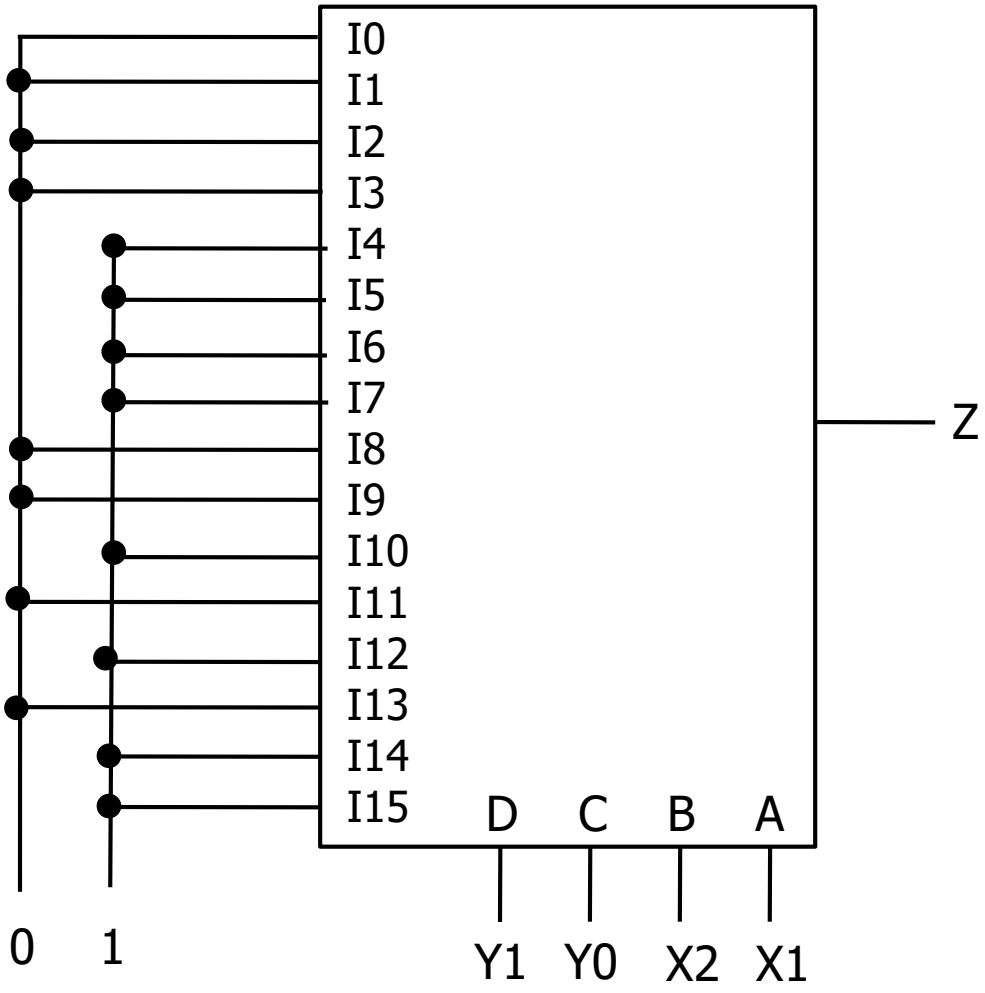




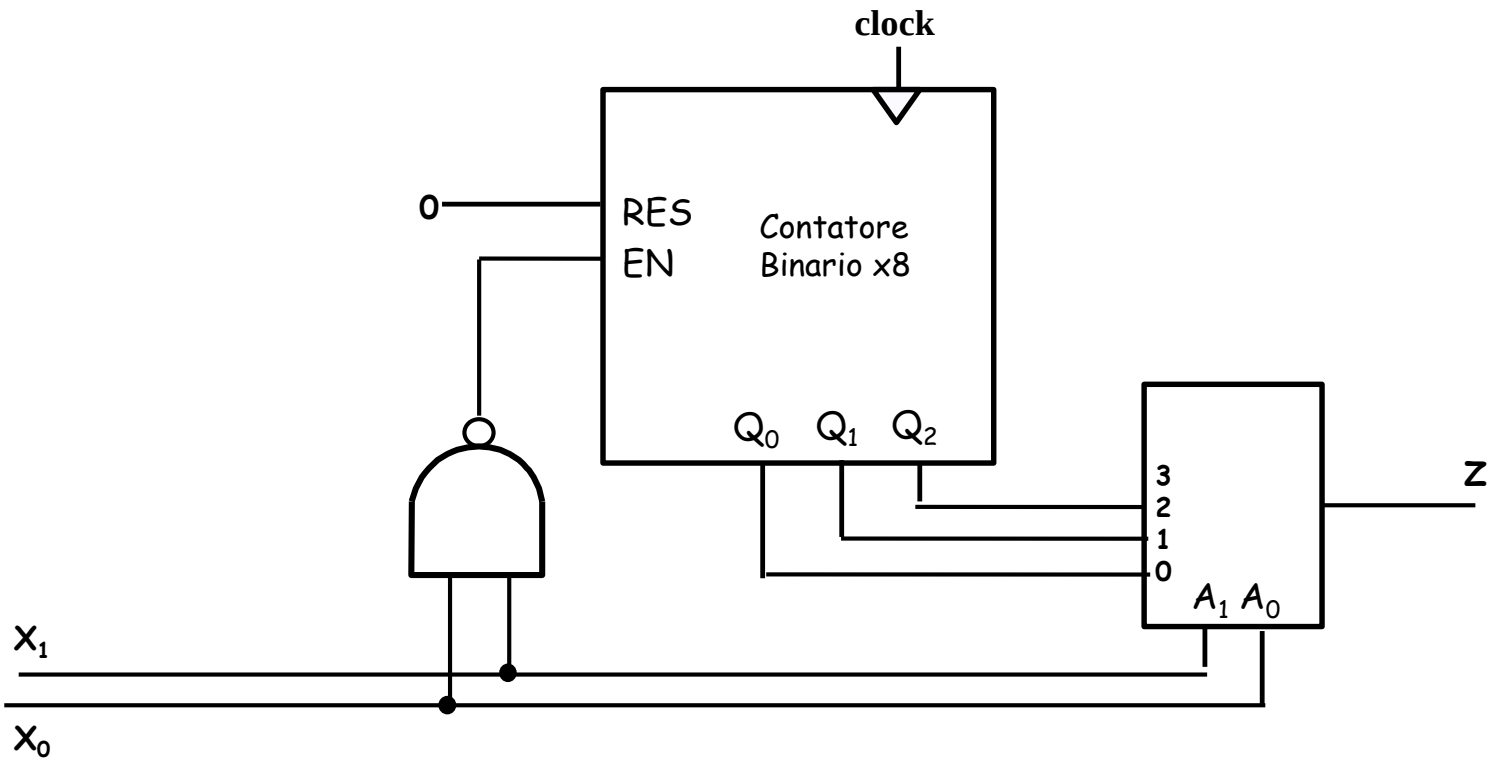
$Y_0 = X1'X2 + y0X1' + y1'y0 + x2y0$

$Z = y1'y0 + X2'y0 + X1y0 + y1X2'$

Esercizio 1.5 – Sintesi con MUX



Esercizio 2.1 – Espressioni



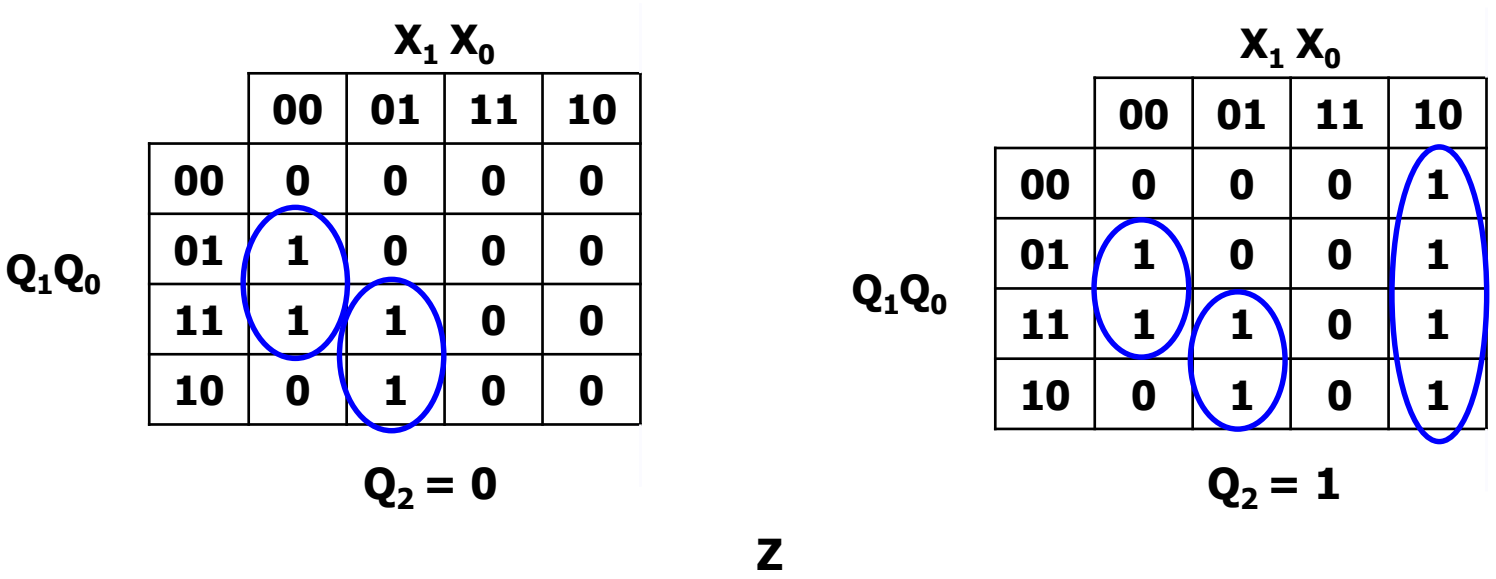
$Z = X_0' X_1' Q_0 + X_0 X_1' Q_1 + X_0` X_1 Q_2$

RES = 0

$EN = (X_1 X_0)' = X_1` + X_0`$

Esercizio 2.2 – Mappa per Z

$$Z = X_0' X_1' Q_0 + X_0 X_1' Q_1 + X_0` X_1 Q_2$$



Esercizio 2.2 – Mappa per RES, EN

$$EN = (X_1\ X_0)' = X_1` + X_0`$$

Q_1Q_0 \ $X_1\ X_0$

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

$Q_2 = 0$

Q_1Q_0 \ $X_1\ X_0$

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

$Q_2 = 1$

EN

La mappa del segnale RES ha tutti i valori a 0

Esercizio 2.2 – Tabella con EN,RES,Z

$(Q_2Q_1Q_0)^n$ \ $X_1\,X_0$	00	01	11	10
000	10,0	10,0	00,0	10,0
001	10,1	10,0	00,0	10,0
011	10,1	10,1	00,0	10,0
010	10,0	10,1	00,0	10,0
100	10,0	10,0	00,0	10,1
101	10,1	10,0	00,0	10,1
111	10,1	10,1	00,0	10,1
110	10,0	10,1	00,0	10,1

$(EN,RES)^n$, Z^n

Esercizio 2.3 – TdT e TdF

$X_1\ X_0$

$(Q_2Q_1Q_0)^n$	00	01	11	10
000	001,0	001,0	000,0	001,0
001	010,1	010,0	001,0	010,0
011	100,1	100,1	011,0	100,0
010	011,0	011,1	010,0	011,0
100	101,0	101,0	100,0	101,1
101	110,1	110,0	101,0	110,1
111	000,1	000,1	111,0	000,1
110	111,0	111,1	110,0	111,1

s.p.

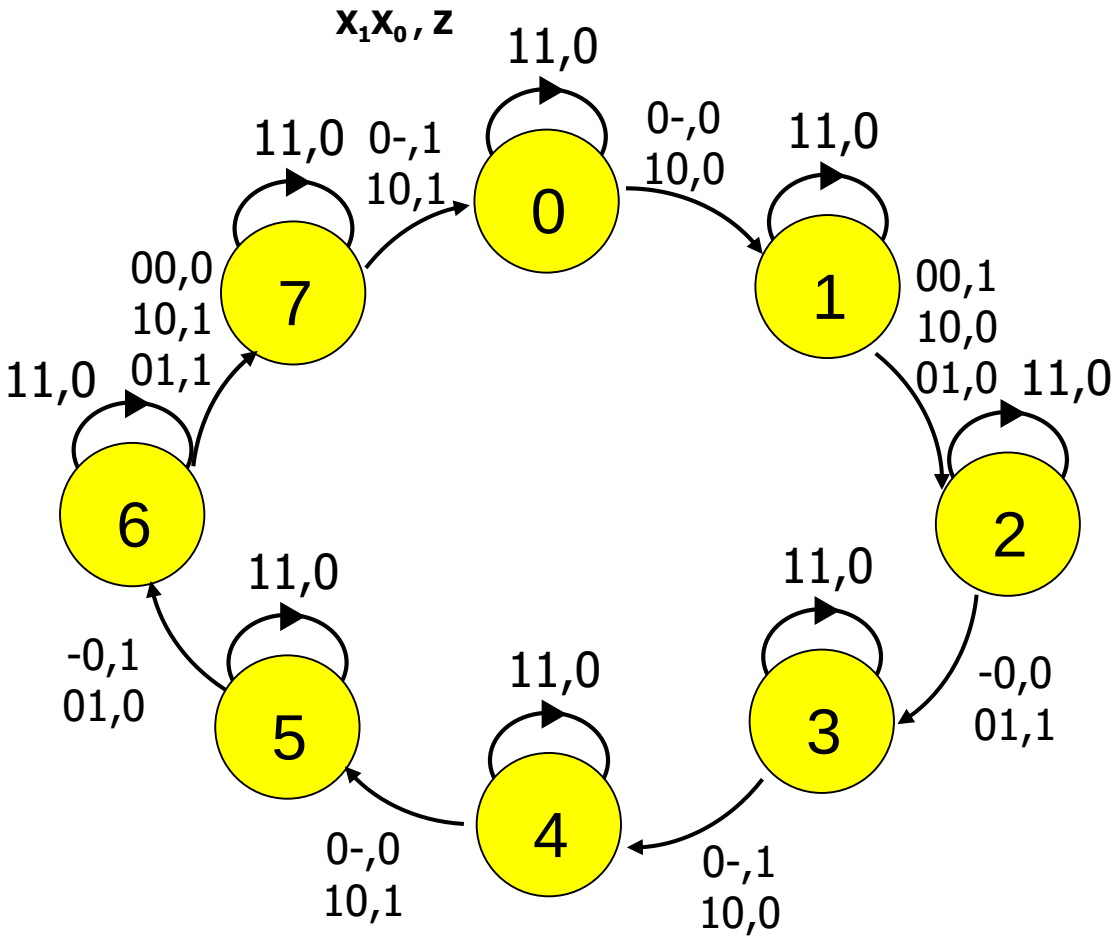
$(Q_2Q_1Q_0)^{n+1}$, Z^n

$X_1\ X_0$

	00	01	11	10
0=000	1,0	1,0	0,0	1,0
1=001	2,1	2,0	1,0	2,0
3=011	4,1	4,1	3,0	4,0
2=010	3,0	3,1	2,0	3,0
4=100	5,0	5,0	4,0	5,1
5=101	6,1	6,0	5,0	6,1
7=111	0,1	0,1	7,0	0,1
6=110	7,0	7,1	6,0	7,1

s.f., Z^n

Esercizio 2.4 – Grafo e comportamento



Comportamento della rete:
Con ingresso pari a X1X0=00, 01, e 10, la rete genera sull'uscita Z un'onda quadra di periodo pari rispettivamente a 2T, 4T e 8T (T: ciclo di clock)
Con ingresso pari a X1X0=11, la rete genera un segnale costante pari a Z=0.