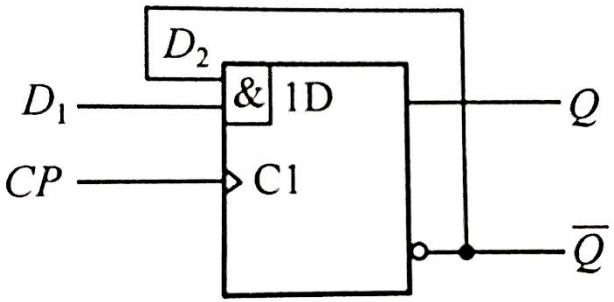
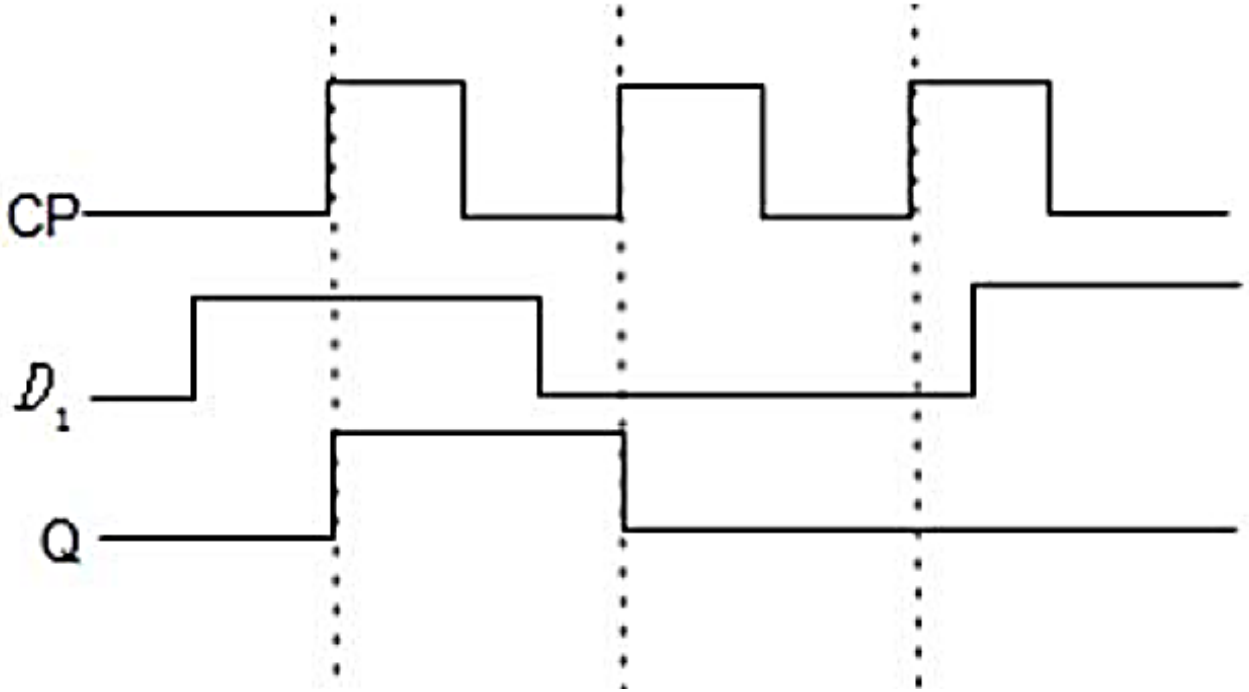
第5次作业

3.2

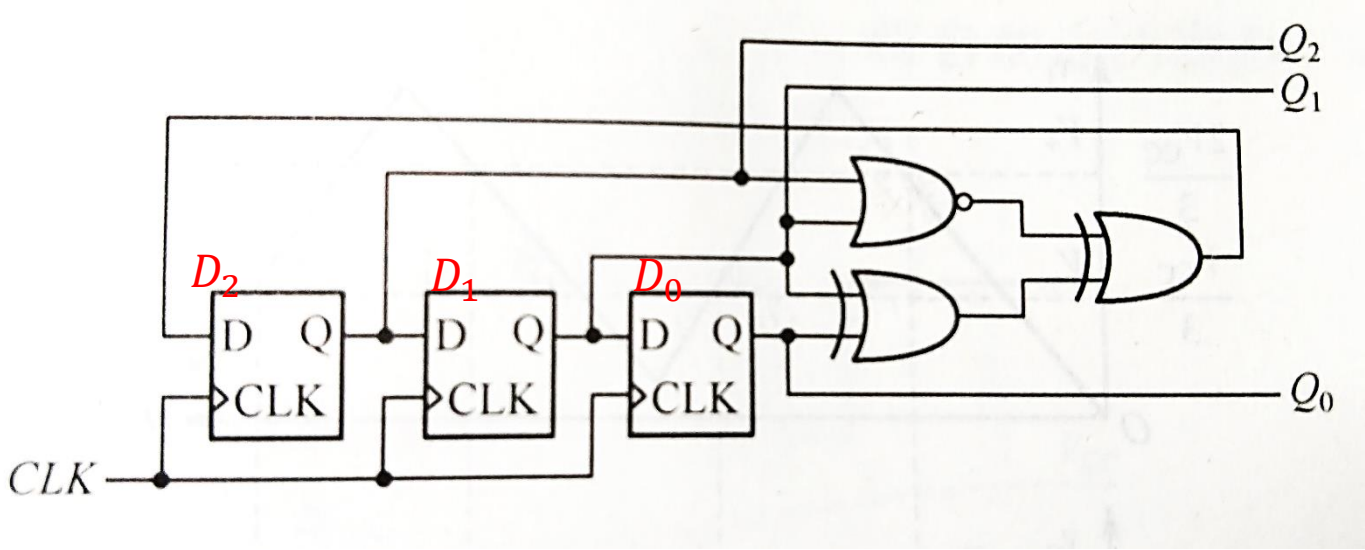
激励函数 $D = D_1\bar{Q}$

$Q = D = D_1\bar{Q}$





3.3



激励方程

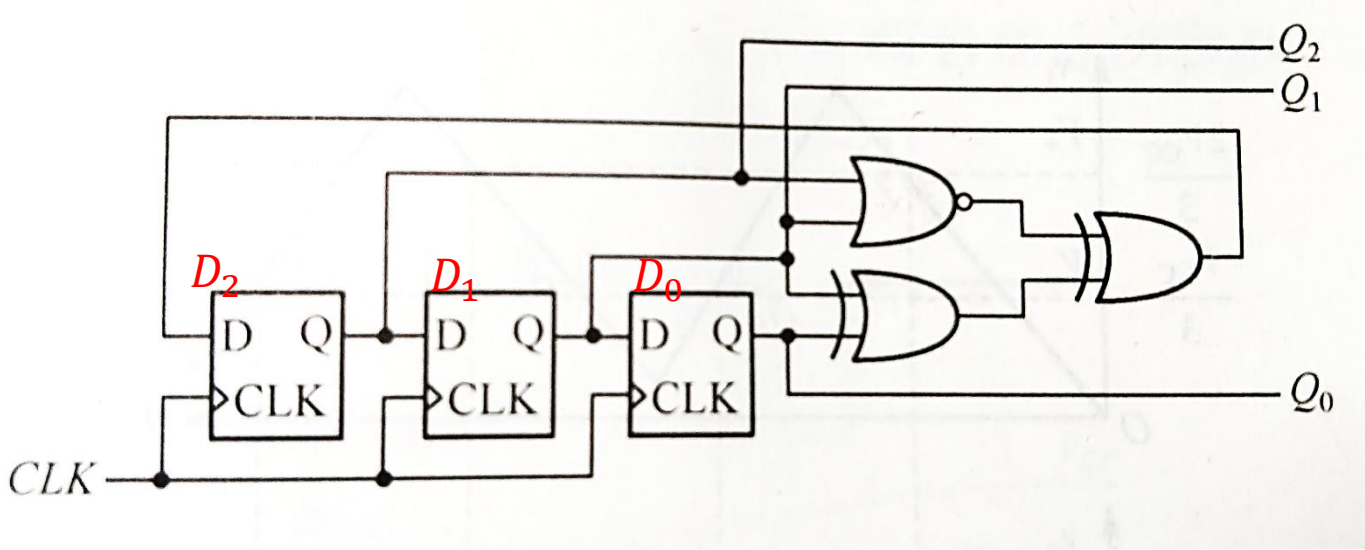
$$D_0 = Q_1$$

$$D_1 = Q_2$$

$$D_2 = (Q_1 \oplus Q_2) \oplus (\overline{Q_1 + Q_2})$$

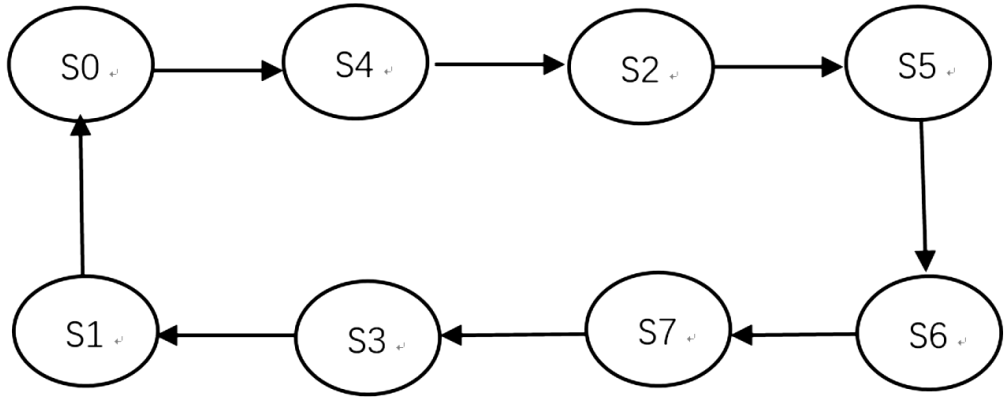
$Q_2Q_1Q_0$	$Q_2^{n+1}Q_1^{n+1}Q_0^{n+1}$
000	100
001	000
010	101
011	001
100	010
101	110
110	111
111	011

3.3

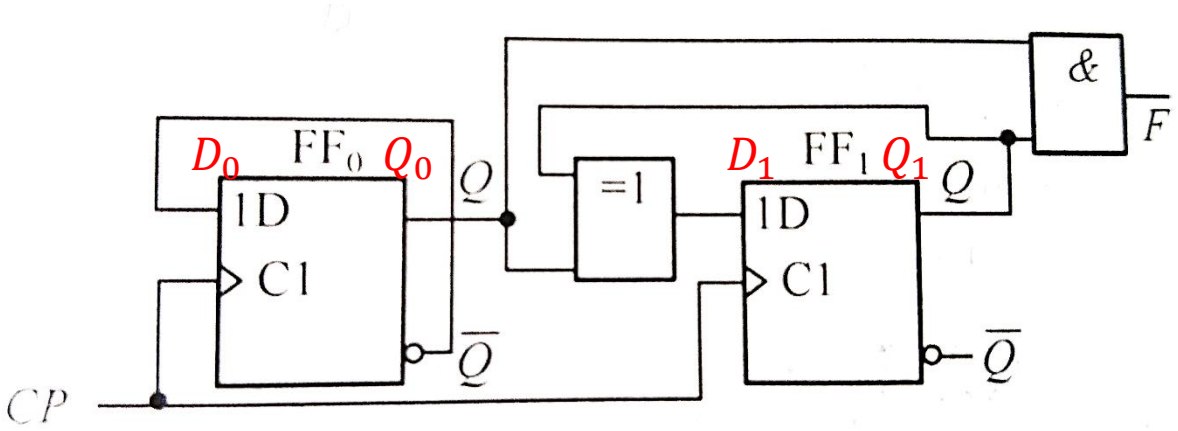


Q	Q^{n+1}
S0	S4
S1	S0
S2	S5
S3	S1
S4	S2
S5	S6
S6	S7
S7	S3

状态图



3.6



激励方程

$$D_0 = \overline{Q_0}$$

$$D_1 = Q_0 \oplus Q_1$$

输出函数

$$F = Q_0 Q_1$$

3.6

激励方程

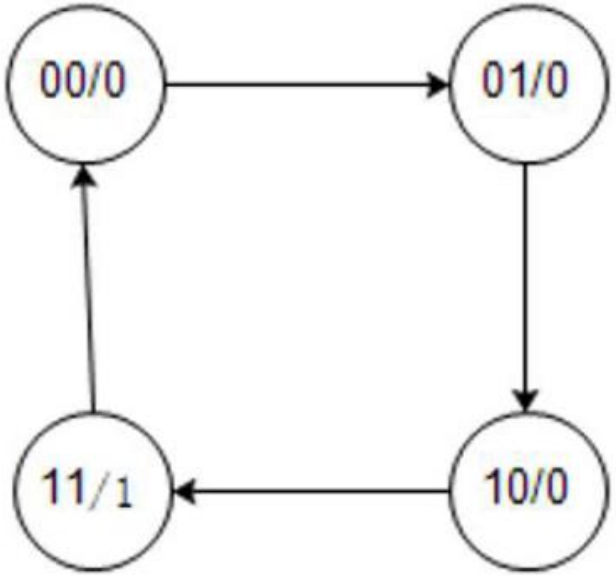
$$D_0 = \overline{Q_0}$$

$$D_1 = Q_0 \oplus Q_1$$

输出函数

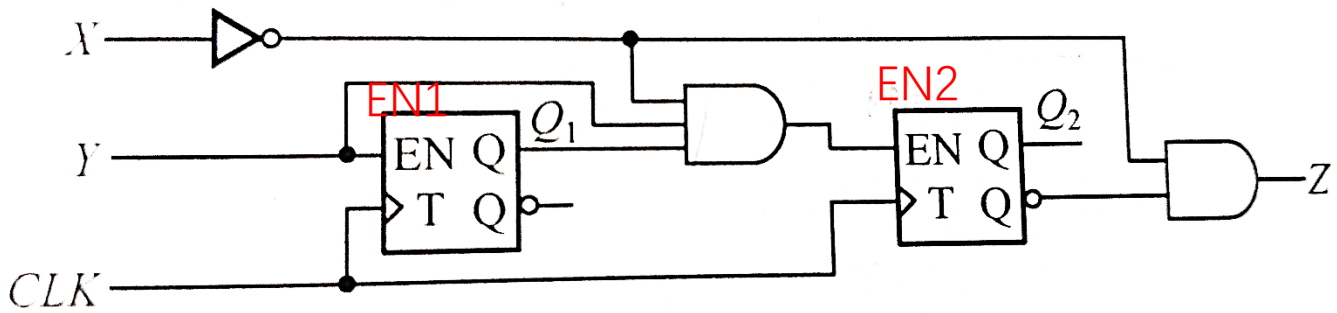
$$F = Q_0 Q_1$$

Q_1Q_0	$Q_1^{n+1}Q_0^{n+1}$	F
00	01	0
01	10	0
10	11	0
11	00	1



逻辑功能：该电路是一个模4计数器，每当完成一次循环计数后就输出一次1

3.7



激励方程 $EN_1 = Y \qquad EN_2 = \overline{XYQ_1}$

次态方程 $Q_1^{n+1} = EN_1 \cdot \overline{Q_1} + \overline{EN_1} \cdot Q_1 = Y\overline{Q_1} + \overline{Y}Q_1$

$$Q_2^{n+1} = EN_2 \cdot \overline{Q_2} + \overline{EN_2} \cdot Q_2 = \overline{XY}\,\overline{Q_2}Q_1 + XQ_2 + \overline{Y}Q_2 + Q_2\overline{Q_1}$$

输出函数 $Z = \bar{X}\,\overline{Q_2}$

3.7 激励转换表

XYQ_2Q_1	EN_2EN_1	${Q_2}^{n+1}{Q_1}^{n+1}$	Z
0000	00	00	1
0001	00	01	1
0010	00	10	0
0011	00	11	0
0100	01	01	1
0101	11	10	1
0110	01	11	0
0111	11	00	0
1000	00	00	0
1001	00	01	0
1010	00	10	0
1011	00	11	0
1100	01	01	0
1101	01	00	0
1110	01	11	0
1111	01	10	0

3.7 状态输出表

Q_2Q_1 \ XY	00	01	10	11
S_0	$S_0/1$	$S_1/1$	$S_0/0$	$S_1/0$
S_1	$S_1/1$	$S_2/1$	$S_1/0$	$S_0/0$
S_2	$S_2/0$	$S_3/0$	$S_2/0$	$S_3/0$
S_3	$S_3/0$	$S_0/0$	$S_3/0$	$S_2/0$

功能描述

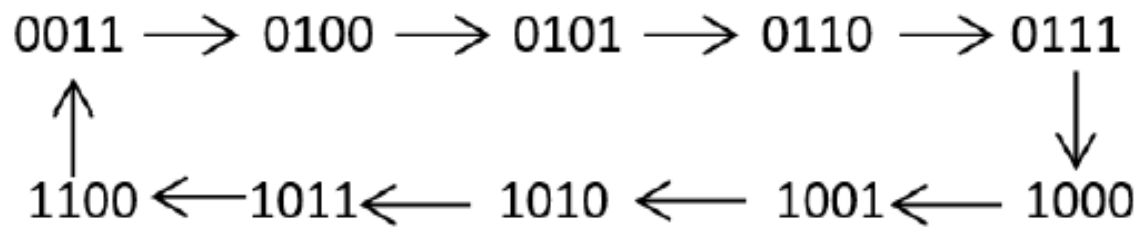
当Y=0时，系统保持不变

当Y=1时，若X=0，系统为模4加1计数器

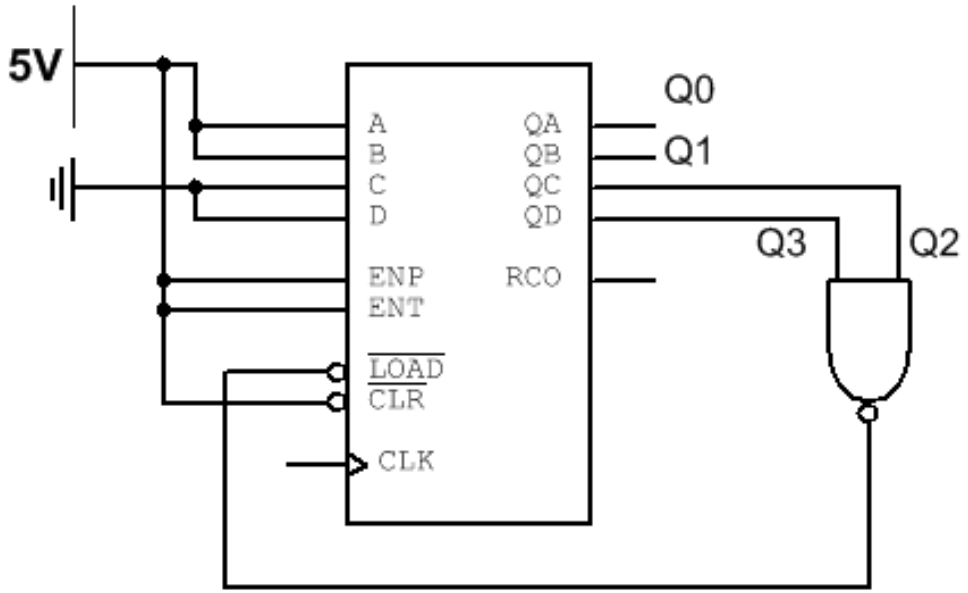
若X=1，系统在S0~S1、S2~S3之间循环

3.9 用一个4位二进制计数器74LS163设计一个模10计数器，其计数序列为3，4，5，…，11，12，3，4

计数序列



利用/LD端实现
从1100到0011的跳变



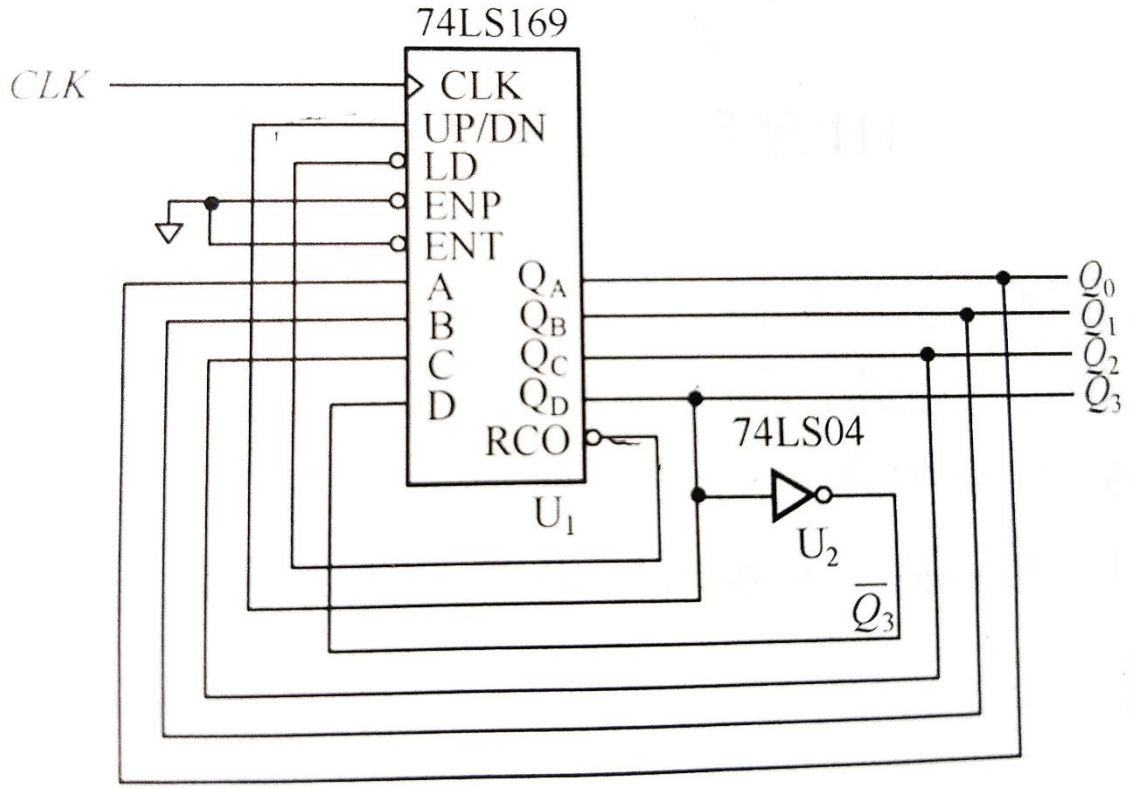
3.10

UP/DN = Q_D

LD = RCO

$A = Q_A$ $B = Q_B$

$C = Q_C$ $D = \overline{Q_D}$



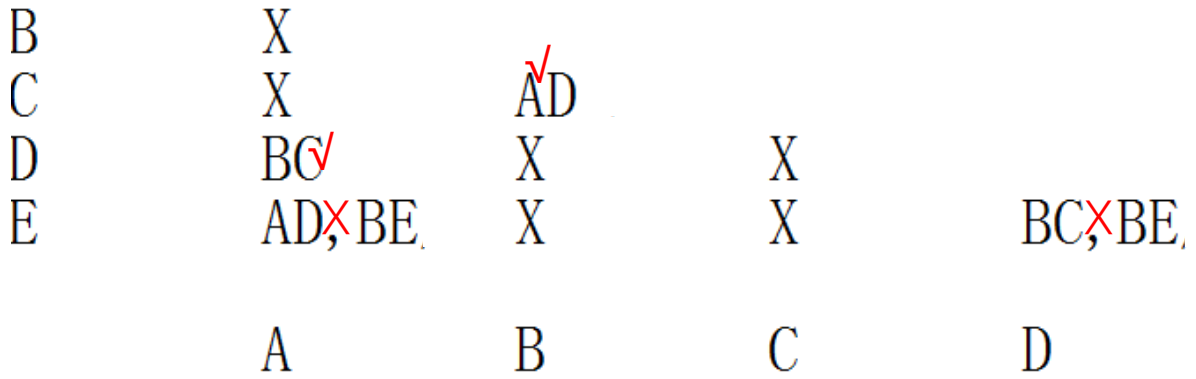
0111~0000减1计数

1000~1111加1计数

模16计数器

3.14

画出隐含表



最大等效类（A,D）（B,C）（E）,分别设为A',B',C'， 最小化状态表为：

X_2X_1 / y	00	01	11
A’	A'/1	B'/0	C'/1
B’	A'/0	C'/0	B'/1
C’	A'/1	B'/0	B'/1

3.15

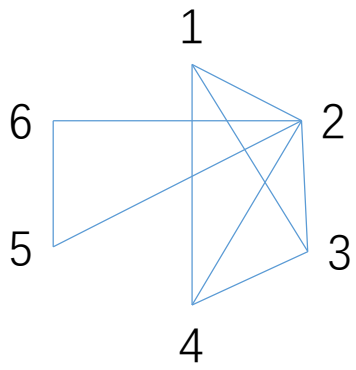
2	25，32				
3	√	12,25			
4	31,34,25	√	13,14,25		
5	X	14	X	X	
6	X	34	X	X	13 √
	1	2	3	4	5

相容类 (1,2) (1,3) (1,4) (2,3) (2,4) (2,5) (2,6) (3,4) (5,6)

3.15

相容类 (1,2) (1,3) (1,4) (2,3) (2,4) (2,5) (2,6) (3,4) (5,6)

状态合并图



最大相容类　(2,5,6) (1,2,3,4)

3.15

最大相容类 (2,5,6) (1,2,3,4)

闭合覆盖表

	覆盖						闭合			
	1	2	3	4	5	6	00	01	11	10
256		2			5	6	56	134	25	2
1234	1	2	3	4			13	4	25	1234
134	1		3	4			13	4	25	134

选择最小化 (1,3,4) (2,5,6)

3.15

设(1,3,4)为A，(2,5,6)为B

最小化状态表

Y \ X1x2	00	01	11	10
A	A/0	A/0	B/1	A/0
B	B/1	A/0	B/1	B/0