**练习五 2**

(1)

J0=Y2+Y1 J1=Y2 D==

K0=1 K1=

(2)

Y0’=(Y2+Y1) Y1’=Y2+Y0Y1 Y2’=

(3)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Y2Y1  Y0 | 00 | 01 | 11 | 10 |
| 0 | 100 | 001 | 001 | 011 |
| 1 | 000 | 010 | 010 | 010 |

(4)Y2Y1Y0🡪

000 100 011

001 010

110 111 101

**12.** “101”序列检测

Y(X/Z)🡪

A B C

|  |  |  |
| --- | --- | --- |
| X  Y | 0 | 1 |
| A | A/0 | B/0 |
| B | C/0 | B/0 |
| C | A/0 | B/1 |

**13. (5.9)** “1101”序列检测

A B C D

|  |  |  |
| --- | --- | --- |
| X  Y | 0 | 1 |
| A | A/0 | B/0 |
| B | A/0 | C/0 |
| C | D/0 | C/0 |
| D | A/0 | B/1 |

**14. (5.10)**

“1111”序列检测

A B C D

|  |  |  |
| --- | --- | --- |
| X  Y | 0 | 1 |
| A | A/0 | B/0 |
| B | A/0 | C/0 |
| C | A/0 | D/0 |
| D | A/0 | \*/1 |

**5.11 P169** 串行偶校验器

X2

X1

X2=0，Z=0，X1串行输入

X2=1时，X1输入末位，Z输出结果。偶数个1，Z=0,奇数个1，Z=1

Y(X2X1/Z)🡪

00/0 00/0

01/0 **B** 01/0

A 10/0 10/1

已有奇数1

11/1 11/0

已有偶数1

循环检测：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X2X1  Y | 00 | 01 | 11 | 10 |
| A | A/0 | B/0 | A/1 | A/0 |
| B | B/0 | A/0 | A/0 | A/1 |

非循环：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X2X1  Y | 00 | 01 | 11 | 10 |
| A | A/0 | B/0 | \*/1 | \*/0 |
| B | B/0 | A/0 | \*/0 | \*/1 |

**5.13 P169**

“111“代码检测

Y/X🡪

B C

A

D E

**5.14(a)**

无相容，为最简

|  |  |  |
| --- | --- | --- |
| X  Y | 0 | 1 |
| A | E/0 | D/0 |
| B | A/1 | F/0 |
| C | C/0 | A/1 |
| D | B/0 | A/1 |
| E | D/1 | C/0 |
| F | C/0 | D/1 |
| G | H/1 | G/1 |
| H | C/1 | B/1 |

|  |  |
| --- | --- |
| B | × |
| C | × | × |
| D | × | × | B,C × |
| E | × | A,D ×  C,F | × | × |
| F | × | × | A,D × | A,D ×  B,C | × |
| G | × | × | × | × | × | × |
| H | × | × | × | × | × | × | B,G ×  C,H |

A B C D E F G

**5.14(b)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X2X1  Y | 00 | 01 | 11 | 10 |
| A | D/0 | D/0 | F/0 | A/0 |
| B | C/1 | D/0 | E/1 | F/0 |
| C | C/1 | D/0 | E/1 | A/0 |
| D | D/0 | B/0 | A/0 | F/0 |
| E | C/1 | F/0 | E/1 | A/0 |
| F | D/0 | D/0 | A/0 | F/0 |
| G | G/0 | G/0 | A/0 | A/0 |
| H | B/1 | D/0 | E/1 | A/0 |

|  |  |
| --- | --- |
| B | × |
| C | × | A,F |
| D | A, F  B, D × | × | × |
| E | × | A,F×  D,F | D,F × | × |
| F | √  (A.F) | × | × | B,D × | × |
| G | A, F  D, G × | × | × | A, F  B, G ×  D, G | × | A, F  D, G × |
| H | × | A, F  B, C | B,C | × | B, C  D, F × | × | × |

A B C D E F G

H A

G B

F C

E D

最大相容为：

（A,F）(B,C,H) (D) (E) (G)

简化表：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X2X1  S | 00 | 01 | 11 | 10 |
| （A,F） S1 | S3/0 | S3/0 | S1/0 | S1/0 |
| (B,C,H) S2 | S2/1 | S3/0 | S4/1 | S1/0 |
| (D) S3 | S3/0 | S2/0 | S1/0 | S1/0 |
| (E) S4 | S2/1 | S1/0 | S4/1 | S1/0 |
| (G) S5 | S5/0 | S5/0 | S1/0 | S1/0 |

**5.15(a)**

|  |  |  |
| --- | --- | --- |
| X  Y | 0 | 1 |
| A | D/\* | A/\* |
| B | E/0 | A/\* |
| C | D/0 | B/\* |
| D | C/\* | C/A |
| E | C/1 | B/A |

(1) 隐含表：

|  |  |
| --- | --- |
| B | D, E |
| C | A, B | A, B  D, E |
| D | A, C  C, D | A, C  C, E × | B, D  (C, D) |
| E | A, B  C, D | × | × | B,C |

A B C D

(2)关系图 A

E B {A, B, C} {A,C,D} {A,D,E}

D C

（3）闭复表

|  |  |  |  |
| --- | --- | --- | --- |
|  | A B C D E | 0 | 1 |
| A, B, C  A, C, D  A, D, E | √ √ √  √ √ √ | D, E  C, D | A, C  A, B, C |
| D, E | √ √ | C | B, C |

第三行因为不闭合，所以消去与ABC相交的状态A，得到新的集合{D,E}, 状态闭合

（4）简化表

|  |  |  |
| --- | --- | --- |
| X  Y | 0 | 1 |
| (A,B,C) 1 | 2/0 | 1/\* |
| (D,E) 2 | 1/1 | 1/\* |

**5.15(b)**

|  |  |  |
| --- | --- | --- |
| X  Y | 0 | 1 |
| 1 | 3/\* | \*/\* |
| 2 | \*/\* | 6/\* |
| 3 | 4/1 | 5/\* |
| 4 | 6/1 | \*/\* |
| 5 | 5/\* | 1/\* |
| 6 | 4/1 | 7/1 |
| 7 | 2/0 | 3/0 |

（1）隐含表

|  |  |
| --- | --- |
| 2 | √ |
| 3 | 3,4 | 5,6 |
| 4 | 3,6 | √ | 4,6 |
| 5 | 3,5 | 1,6 | 1,5  4,5 | 5,6 |
| 6 | 3,4 | 6,7 × | 5,7 | 4,6 | 1,7  4,5 |
| 7 | 2,3 | 3,6 | × | × | 1,3  2,5 | × |

1 2 3 4 5 6

（2）关系图：

1

7 2

6 3

5 4

（3）闭复表

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1 2 3 4 5 6 7 | 0 | 1 |
| 1,2,3,4,5  1,2,5,7  1,3,4,5,6 | √ √ √ √  √ √ √ √ √ | 2,3,5  3,4,5,6 | 1,3,6  1,5,7 |
| 2,5,7  1,3,4,6 | √ √ √  √ √ √ √ | 2,5  3,4,6 | 1,3,6  5,7 |

{1,2,3,4,5}，{1,2,5,7}，{1,3,4,5,6}

（4）简化表

|  |  |  |
| --- | --- | --- |
| X  Y | 0 | 1 |
| (1,3,4,6) A | A/1 | B/1 |
| (2,5,7) B | B/0 | A/0 |

**5.16** 赋值、实现

|  |  |  |
| --- | --- | --- |
| X  Y | 0 | 1 |
| 1 | 1/1 | 3/0 |
| 2 | 4/0 | 3/0 |
| 3 | 2/0 | 3/1 |
| 4 | 1/0 | 3/0 |

经验原则

（1）相邻关系：

1. 【1】（1,4）（1,2,3,4）

【2】—

1. （1,3）\* (3,4) (2,3)
2. (2,4)

（2）分配:

|  |  |  |
| --- | --- | --- |
| Y2  Y1 | 0 | 1 |
| 0 | 1 | 4 |
| 1 | 3 | 2 |

|  |  |  |
| --- | --- | --- |
| X  Y2Y1 | 0 | 1 |
| (1)00 | 00/1 | 01/0 |
| (3)01 | 11/0 | 01/1 |
| (2)11 | 10/0 | 01/0 |
| (4)10 | 00/0 | 01/0 |

（3）赋值表

（3）实现

方程：

Z= +X

Y2’=

激励：J2= J1

K2= K1==

**16.** 按经验原则的状态分配

|  |  |  |
| --- | --- | --- |
| X  Y | 0 | 1 |
| 1 | 1/1 | 3/0 |
| 2 | 4/0 | 3/0 |
| 3 | 2/0 | 4/1 |
| 4 | 1/0 | 2/0 |

（1）相邻关系：

1. 【1】（1,2）（1,4）

【2】（2,3）（3,4）

1. （1,3）(3,4) (2,4)（1,2）
2. （2，4）

（2）状态分配:

|  |  |  |
| --- | --- | --- |
| Y2  Y1 | 0 | 1 |
| 0 | 1 | 4 |
| 1 | 2 | 3 |

（3）赋值表

|  |  |  |
| --- | --- | --- |
| X  Y2Y1 | 0 | 1 |
| (1)00 | 00/1 | 11/0 |
| (3)01 | 10/0 | 11/0 |
| (2)11 | 01/0 | 10/1 |
| (4)10 | 00/0 | 01/0 |

**17.** 按经验原则分配状态

|  |  |  |  |
| --- | --- | --- | --- |
| X  Y | 01 | 11 | 10 |
| A | B/0 | C/0 | A/\* |
| B | B/1 | A/1 | A/0 |
| C | A/\* | A/1 | A/\* |

（1）相邻关系：

1. 【1】(A,B)\* (B,C)\* (A,C)

【2】(A,B) (A,C)\*

1. (A,B,C) (A,B)
2. (B,C)

（2）分配:

|  |  |  |
| --- | --- | --- |
| Y2  Y1 | 0 | 1 |
| 0 | A | B |
| 1 |  | C |

（3）赋值表

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X  Y2Y1 | 00 | 01 | 11 | 10 |
| (A)00 | \* | 10/0 | 11/0 | 00/\* |
| 01 | \* | \* | \* | \* |
| (C)11 | \* | 00/\* | 00/1 | 00/0 |
| (B)10 | \* | 10/1 | 00/1 | 00/0 |

**25.** 三位二进制（8进制） 减

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Y2Y1  Y0 | 00 | 01 | 11 | 10 |
| 0 | 111 | 001 | 101 | 011 |
| 1 | 000 | 010 | 110 | 100 |

Y0’=

Y1’=+Y0Y1

Y2’+Y2

J0=1, J1=, J2=

K0=1, K1=, K2=

**26. (5.22)** 可控同步四进制加法计数器

|  |  |  |
| --- | --- | --- |
| X  Y2Y1 | 0 | 1 |
| 00 | 00/0 | 01/0 |
| 01 | 01/0 | 10/0 |
| 11 | 11/0 | 00/1 |
| 10 | 10/0 | 11/0 |

Z=XY1Y0

Y1’=Y1+Y1+X+(Y1

Y0’=Y0+X

J1=XY0 J0=X

K1=XY0 K0=X

**5.20** 同步7进制减法计数器，用JK

减法

状态表

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Y2Y1  Y0 | 00 | 01 | 11 | 10 |
| 0 | 110 | 001 | 101 | 011 |
| 1 | 000 | 010 | \* | 100 |

方程：

Y2’= +Y2Y1+Y2=+(Y1+

Y1’=

Y0’=Y1+Y2

激励 JK：

J2= J1=

K2= K1= K0=1

加法：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Y2Y1  Y0 | 00 | 01 | 11 | 10 |
| 0 | 001 | 011 | 000 | 101 |
| 1 | 010 | 100 | \* | 110 |

方程：

Y0’= +

Y1’=

Y2’=Y1+Y2

激励：

= J1= J2=

K0=1 K1= K2==Y1