

时序逻辑作业

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一、

1. 组合逻辑电路、储存电路

2. $R_D S_D = 0$

3. $Q_{n+1} = JQ_n + \overline{K}Q_n$

4. $Q_{n+1} = D$

5. 同步时序、异步时序

6. N

7. 反馈复位法、预置法

8. 100

9. 256

10. SR触发器、JK触发器、D触发器

二、

1. C

2. B

3. B

4. D

5. C

6. A

7. D

8. B

9. B

10. A

三

先看是何种触发器，再微调。

脚标为n 目前状态

1、

$$1. (1) \quad D_1 = \overline{Q_3}^n \quad D_2 = Q_1^n \quad D_3 = Q_1^n Q_2^n$$

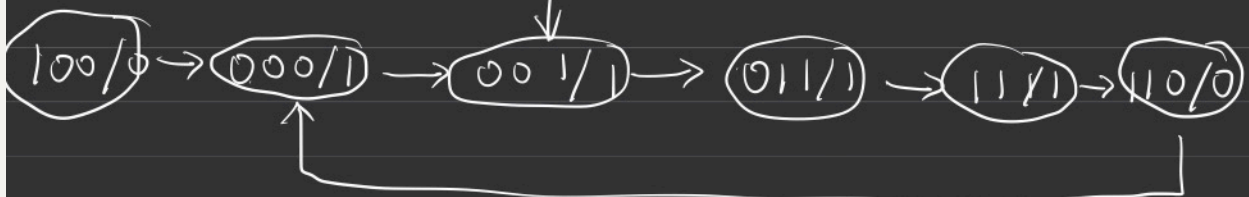
代入D触发器方程: $Q^{n+1} = D \quad (CP=1) \quad Q^{n+1} = Q^n \quad (CP=0).$

得状态: $Q_1^{n+1} = \overline{Q_3}^n \quad Q_2^{n+1} = \cancel{Q_1^{n+1}} \quad Q_3^{n+1} = \cancel{Q_1^{n+1}} \cdot \cancel{Q_2^{n+1}}$
 $Q_2^{n+1} = Q_1^n \quad Q_3^{n+1} = Q_1^n \cdot Q_2^n$

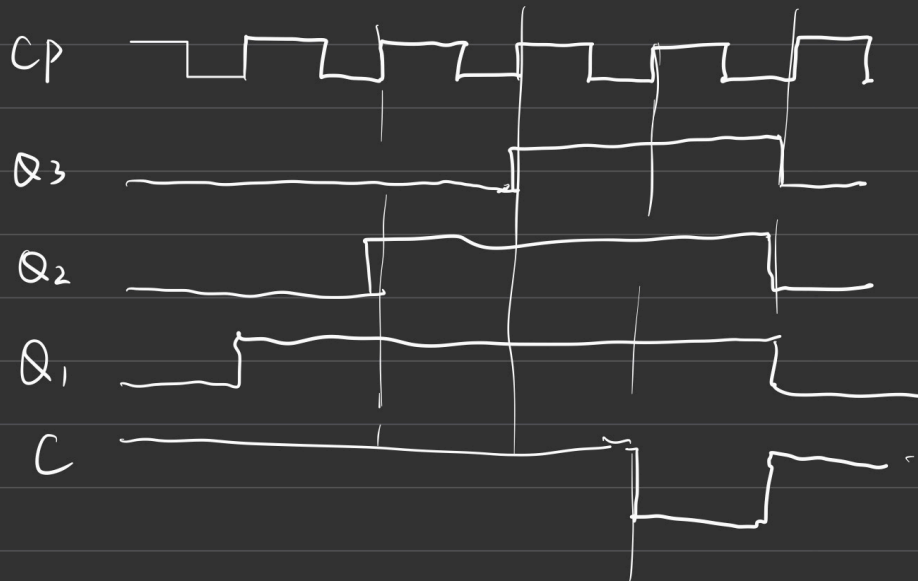
$$C = \overline{Q_1^n \cdot Q_3^n}$$

(2)	Q_3^n	Q_2^n	Q_1^n	Q_3^{n+1}	Q_2^{n+1}	Q_1^{n+1}	C
✓	0	0	0	0	0	1	1
✓	0	0	1	0	1	1	1
	0	1	0	0	0	1	1
✓	0	1	1	1	1	1	1
	1	0	0	0	0	0	0
	1	0	1	0	1	0	1
✓	1	1	0	0	0	0	0
✓	1	1	1	1	1	0	1

$$(011/1) \rightarrow (010/1) \quad Q_3 Q_2 Q_1 / C$$

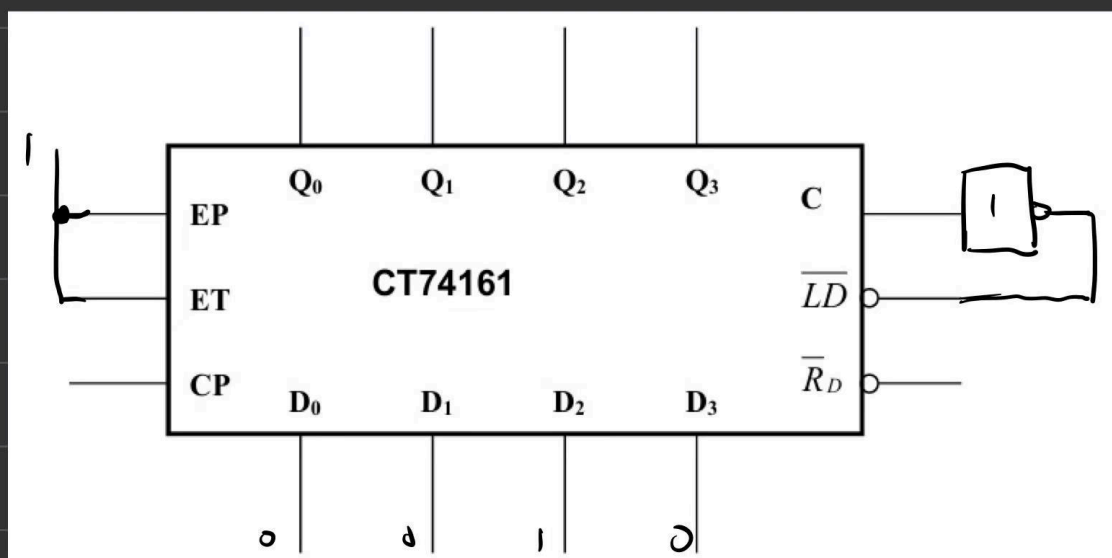


时序图 只写循环!

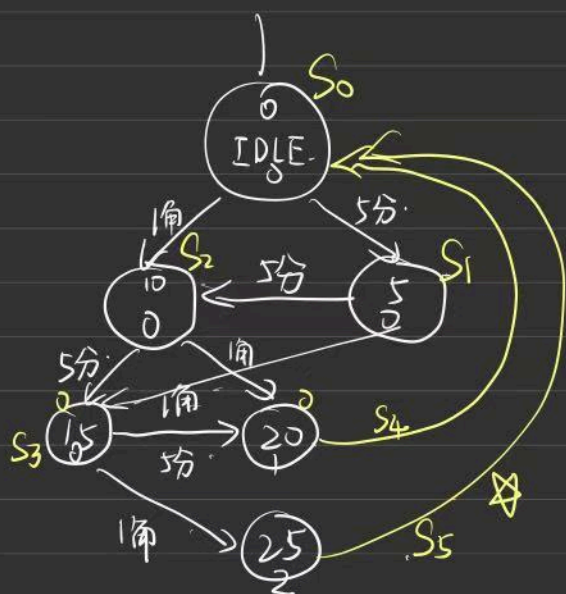


(3) 自启动功能的同步五进制加法计数器

2.



3.



状态

In	current S	next S'
0	000	001
1	000	010
0	001	010
1	001	011
0	010	011
1	010	100
0	011	100
1	011	101
X	100	000
X	101	000

输出逻辑

S ₂	S ₁	S ₀	Out
0	0	0	00
0	0	1	00
0	1	0	00
0	1	1	00
1	0	0	01
1	0	1	10

In	含义	S	含义	编码
0	投入5分	S ₀	未投入	000
1	1角	S ₁	5分	001
		S ₂	1角	010
		S ₃	1角5分	011
		S ₄	2角	100
		S ₅	2角5分	101
Out	含义			
00	钱不够			
01	刚好够			
10	够找5分钱			

状态转移逻辑函数表达式:

$$s'_2 = m_5 + m_6 + m_7 = \overline{s_2 s_1 s_0} I + \overline{s_2 s_1 s_0} \overline{I} + \overline{s_2 s_1 s_0} I$$

$$s'_1 = m_1 + m_2 + m_3 + m_4 = \overline{s_2 s_1 s_0} I + \overline{s_2 s_1 s_0} \overline{I} + \overline{s_2 s_1 s_0} I + \overline{s_2 s_1 s_0} \overline{I}$$

$$s'_0 = m_0 + m_3 + m_4 + m_7 = \overline{s_2 s_1 s_0} \overline{I} + \overline{s_2 s_1 s_0} I + \overline{s_2 s_1 s_0} \overline{I} + \overline{s_2 s_1 s_0} I$$