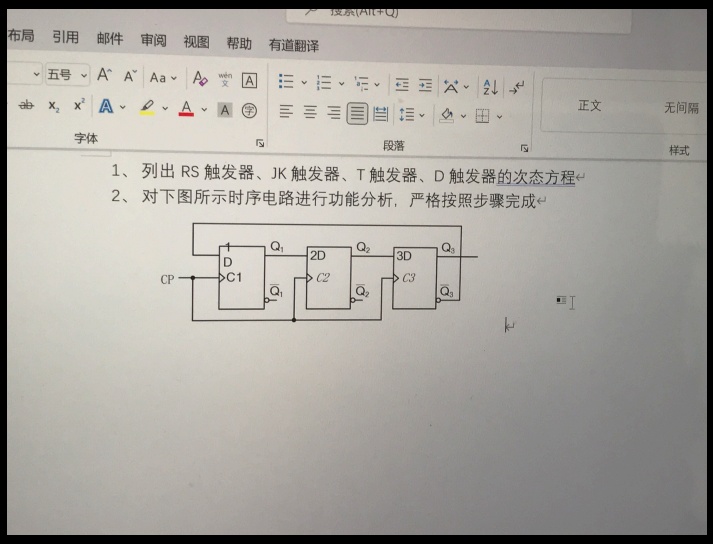


1.

1) RS:

$$\begin{cases} Q^{n+1} = S + \bar{R}Q^n \quad (CP=1) \\ RS = 0 \end{cases}$$

2) JK:

$$Q^{n+1} = J\bar{Q}^n + \bar{K}Q^n$$

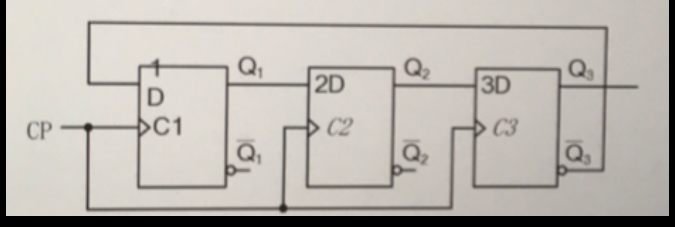
3) T:

$$Q^{n+1} = T\bar{Q}^n + \bar{T}Q^n$$

4) D:

$$Q^{n+1} = D \quad (CP=1)$$

2.



Y

① 分解电路组成：3个D触发器构成的莫尔型同步时序电路

② 列出输出方程：$Y = Q_3^n$

③ 列出状态方程：

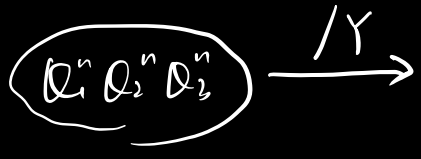
$$\begin{cases} Q_1^{n+1} = \overline{Q_3^n} \\ Q_2^{n+1} = Q_1^n \end{cases}$$

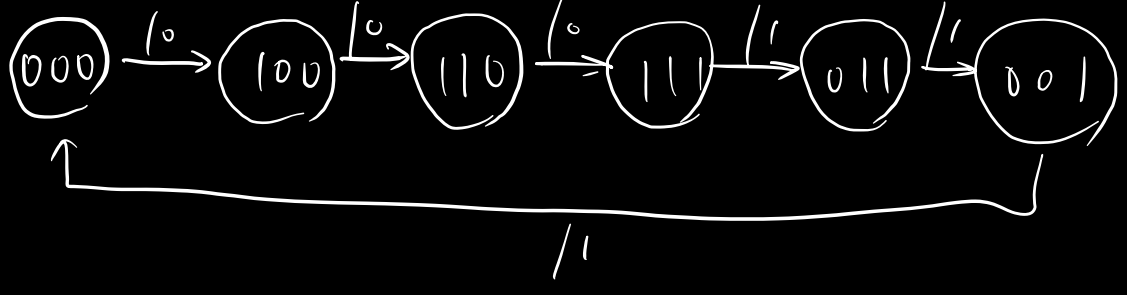
$$Q_3^{n+1} = Q_2^n$$

④ 列出状态转换表：

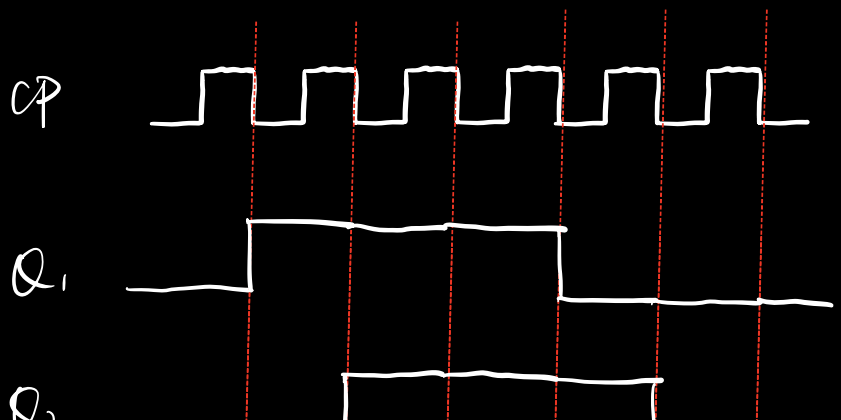
$Q_1^n Q_2^n Q_3^n$	$Q_1^{n+1} Q_2^{n+1} Q_3^{n+1} / Y$
000	100/0
100	110/0
110	111/0
111	011/1
011	001/1
001	000/1

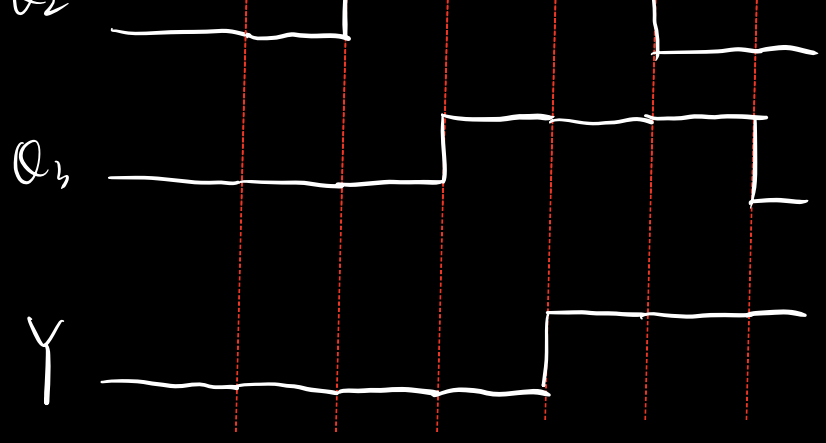
⑤ 列出状态转换图：





⑥ 画出波形图：





⑦ 分析功能：

计数器，每6个时钟上升沿，$Q_1Q_2Q_3$变化一个轮回，

Y输出3个0和3个1