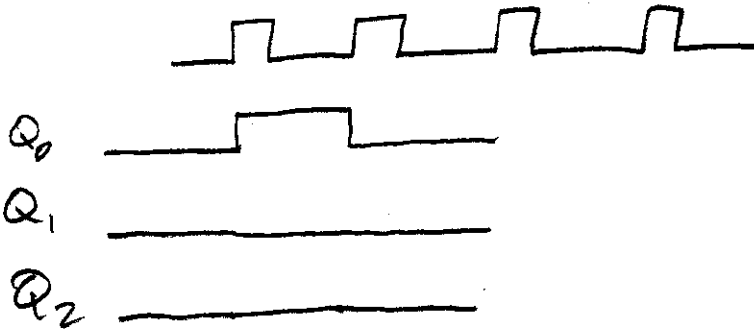


Homework #5 Solu

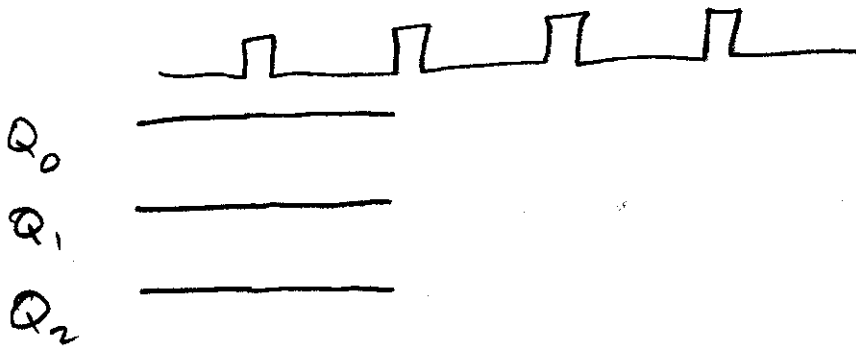
①

Assume $Q_0 = Q_1 = Q_2 = 0$

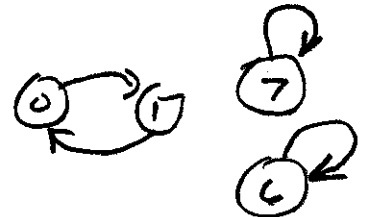
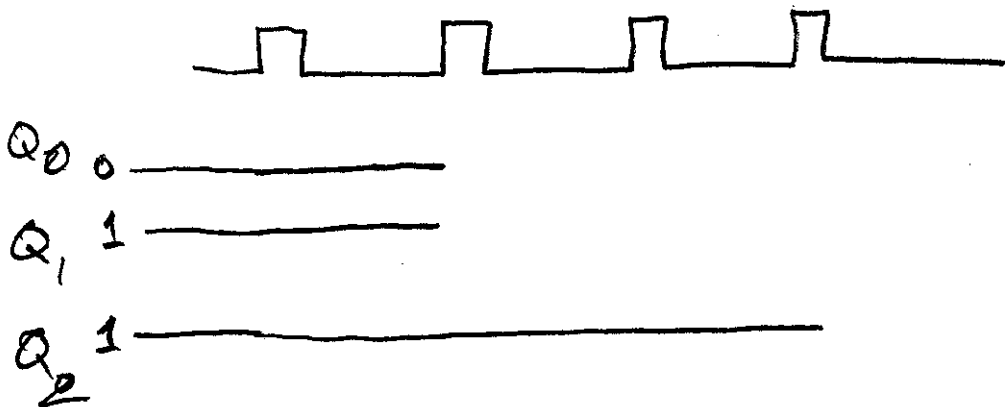


But not complete
So, pick some other
count for the initial
state.

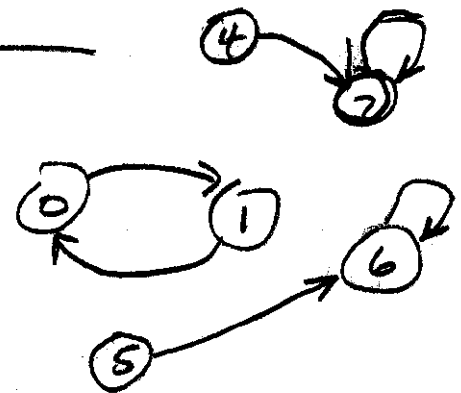
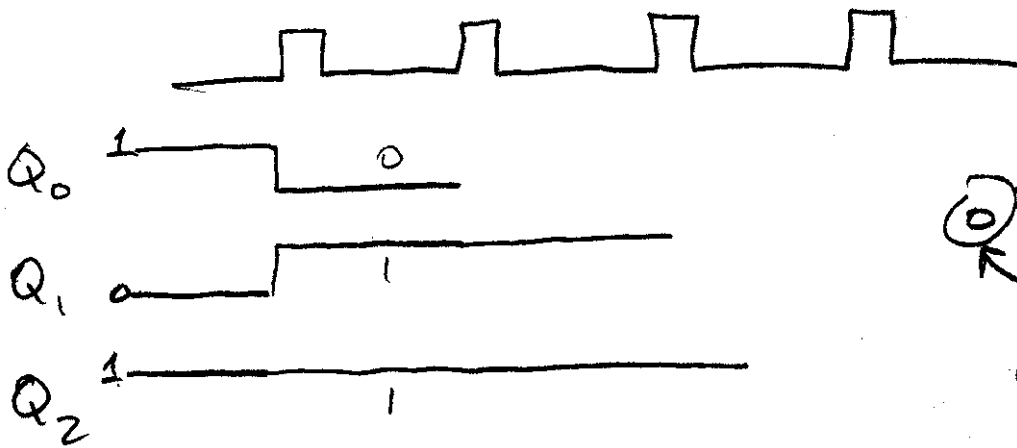
$Q_0 = Q_1 = Q_2 = 1$



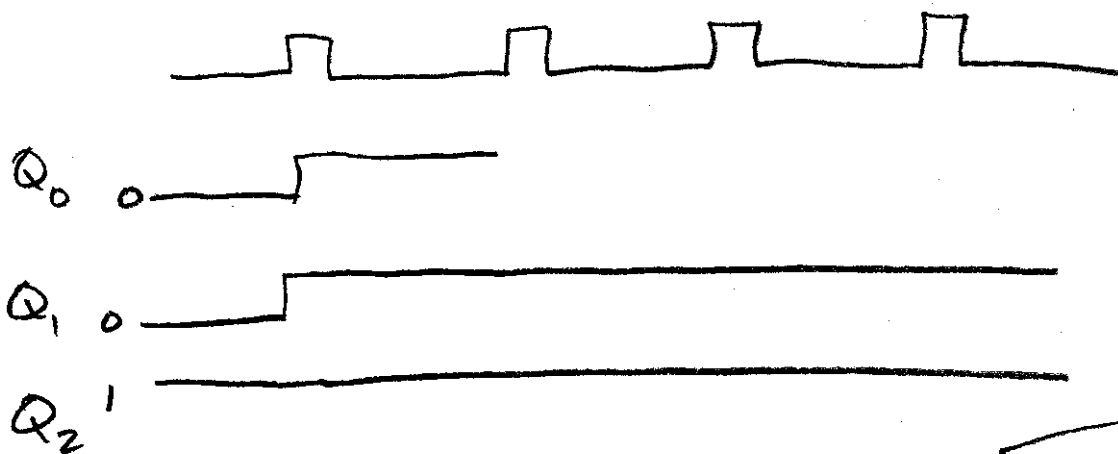
$Q_0 = 0, Q_1 = Q_2 = 1$



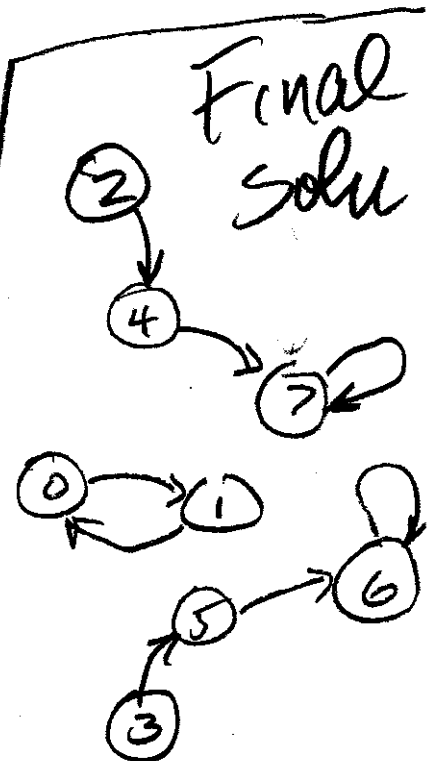
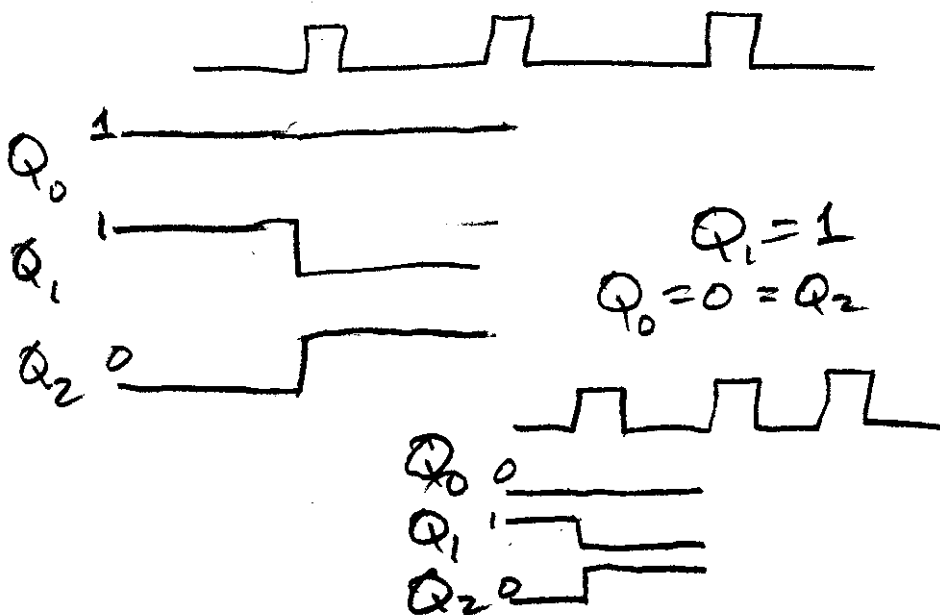
$$Q_0 = Q_2 = 1, Q_1 = 0$$



$$Q_0 = Q_1 = 0, Q_2 = 1$$



$$Q_0 = Q_1 = 1, Q_2 = 0$$



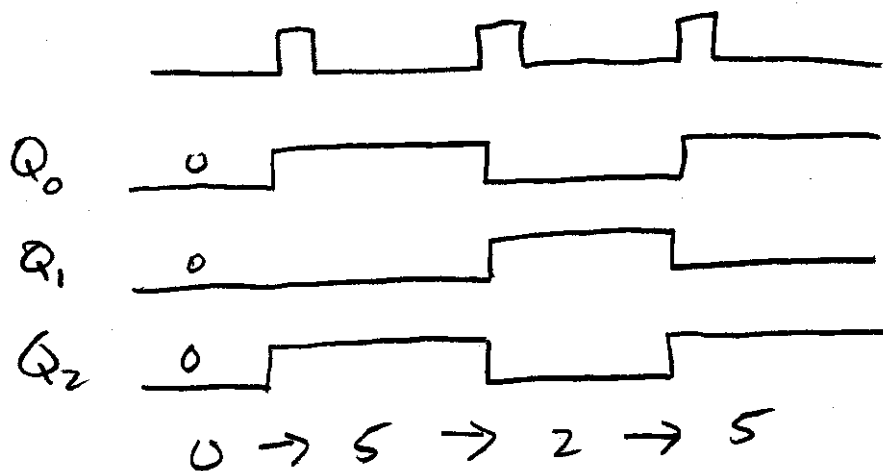
#2

$$D_0 = Q_1 + \overline{Q_0}$$

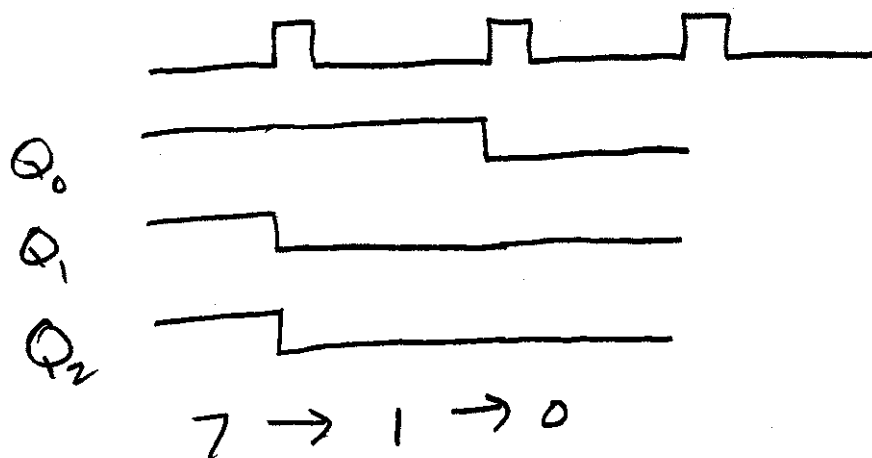
$$J_1 = Q_2, \quad K_1 = Q_1 \cdot \overline{Q_2} + Q_2$$

$$T_2 = Q_2 + \overline{Q_0}$$

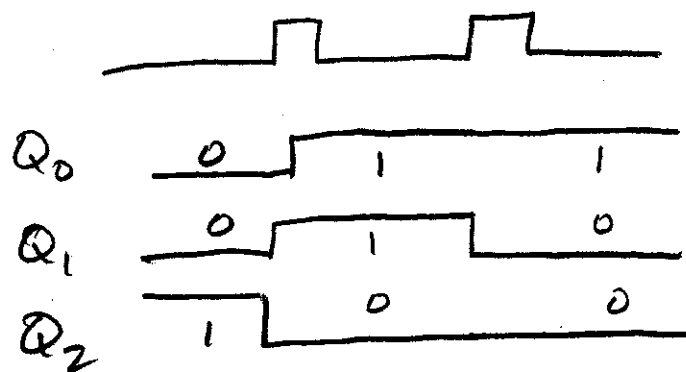
$$Q_2 = Q_1 = Q_0$$



$$Q_2 = Q_1 = Q_0 = 1$$



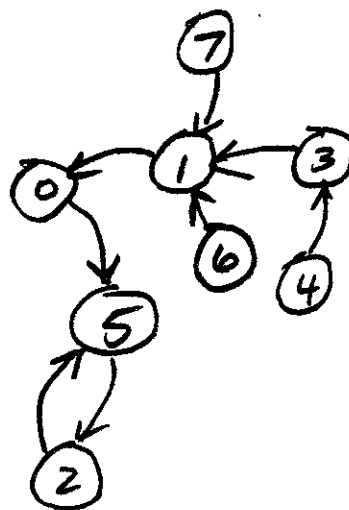
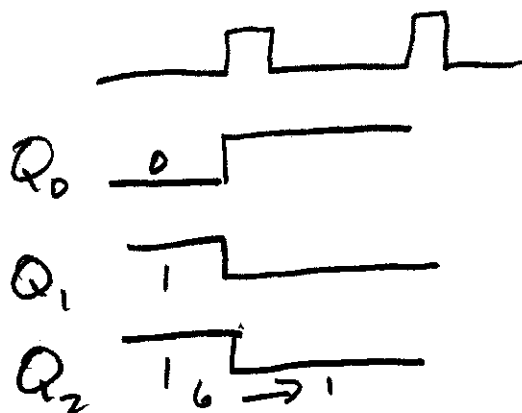
$$Q_2 = 1, Q_1 = Q_0 = 0$$



4 → 3 → 1

Final soln:

$$Q_2 = Q_1 = 1, Q_0 = 0$$



#3

consider 3-bit counter

Pres	NEXT $Q_2 Q_1 Q_0$	next $\bar{Q}_2 \bar{Q}_1 \bar{Q}_0$
000	001	110
001	010	101
010	011	100
011	100	011
100	101	010
101	110	001
110	111	000
111	000	111

no design changes needed.
just take the outputs from the $\bar{Q}$'s !!