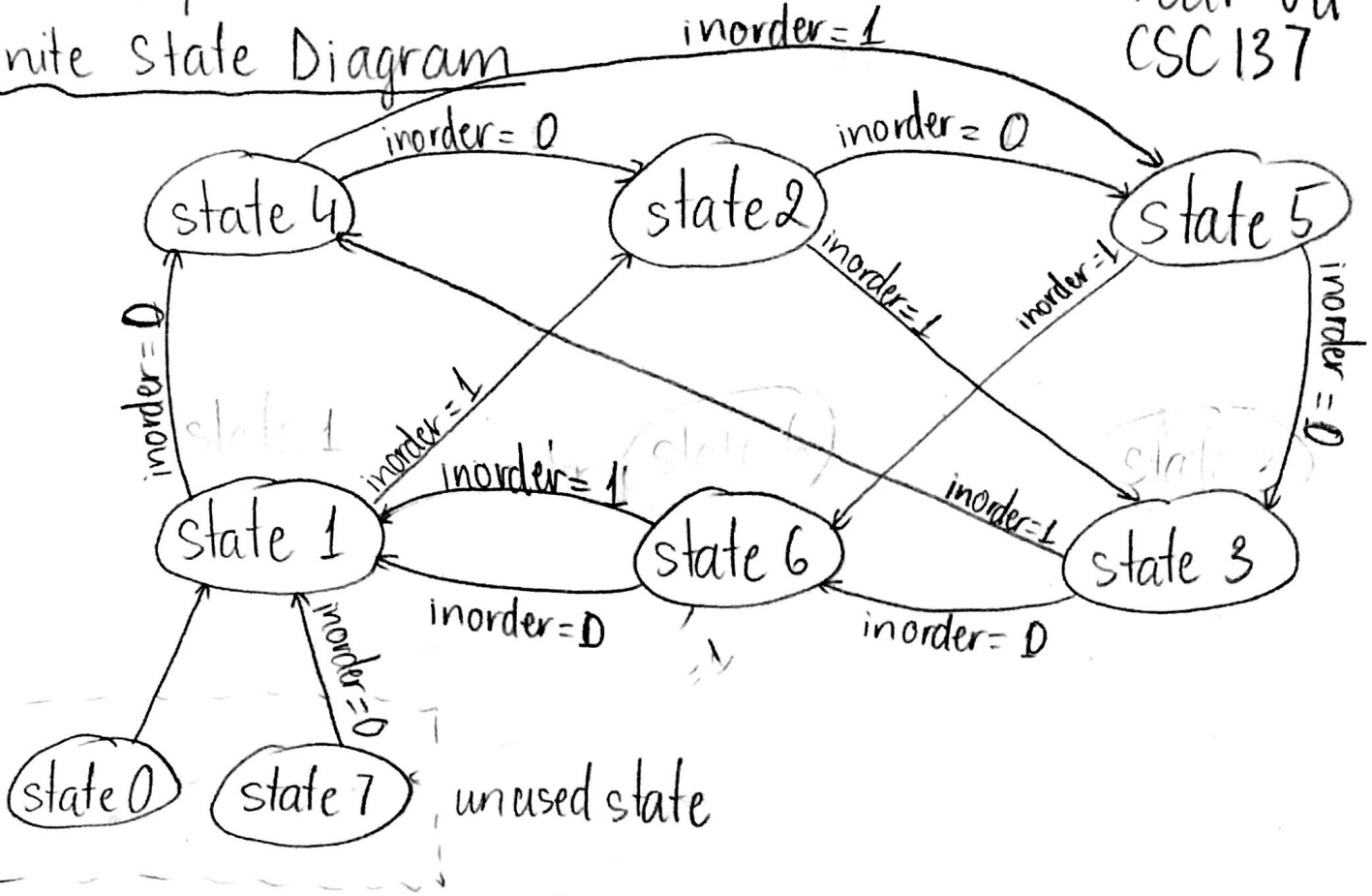
Given Sequence

Finite State Diagram

Hoat Vu
CSC 137

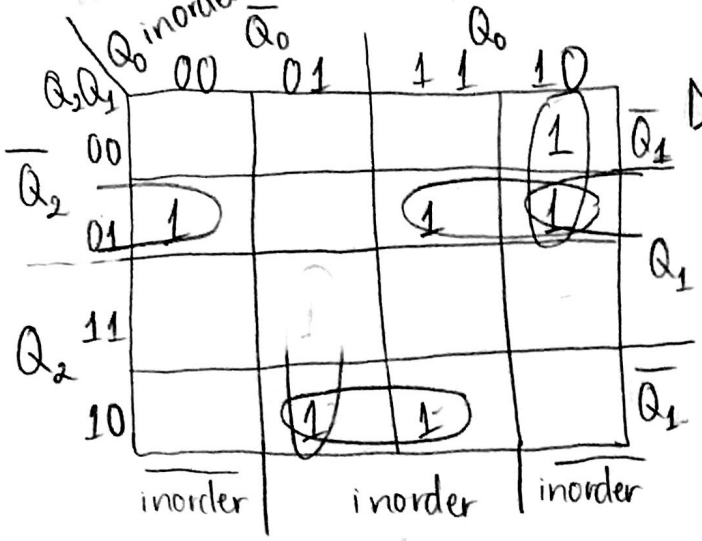


FSM Transition Table

	current state				input	next state			
	Q_2	Q_1	Q_0		InOrder	Q_2^+	Q_1^+	Q_0^+	
0	0	0	0	0	0	0	0	1	1
1	0	0	0	0	1	0	0	1	1
2	0	0	1	1	0	1	0	0	4
3	0	0	1	1	1	0	1	0	2
4	0	1	0	2	0	1	0	1	
5	0	1	0	2	1	0	1	1	
6	0	1	1	3	0	1	1	0	
7	0	1	1	3	1	1	0	0	
8	1	0	0	4	0	0	1	0	
9	1	0	0	4	1	1	0	1	
10	1	0	1	5	0	0	1	1	
11	1	0	1	5	1	1	1	0	
12	1	1	0	6	0	0	0	1	
13	1	1	0	6	1	0	0	1	
14	1	1	1	7	0	0	0	1	
15	1	1	1	7	1	0	0	1	

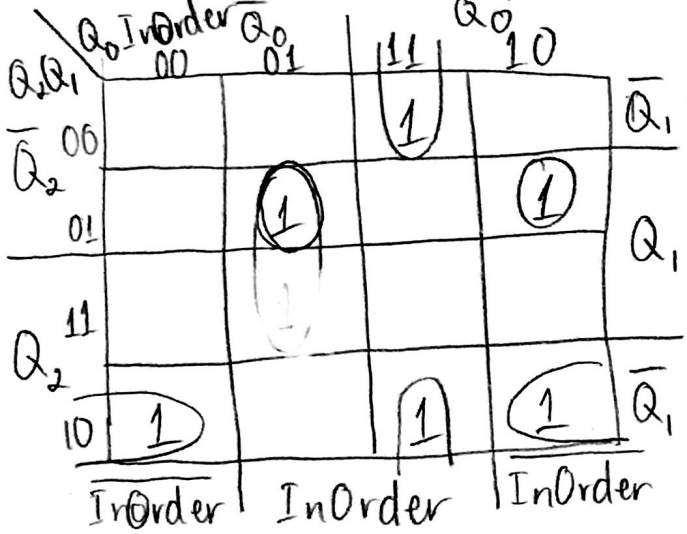
K-map for Next State

$D_2 = \Sigma m(2,4,6,7,9,11)$



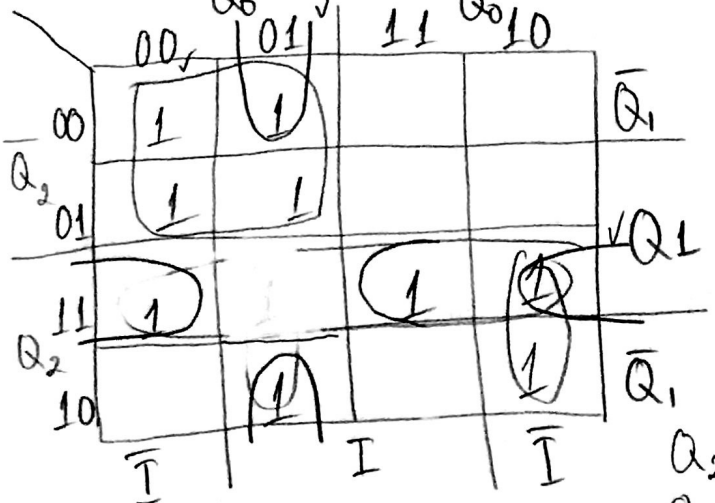
$D_2 = \bar{Q}_2 Q_1 Q_0 + \bar{Q}_2 Q_1 \overline{\text{inorder}} + \bar{Q}_2 Q_0 \overline{\text{inorder}} + Q_2 \bar{Q}_1 \text{InOrder}$

$D_1 = \Sigma m(3,5,6,8,10,11,$)



$D_1 = \ldots + Q_2 \bar{Q}_1 \overline{\text{InOrder}} + \bar{Q}_1 Q_0 \text{InOrder} + \bar{Q}_2 Q_1 \bar{Q}_0 \text{InOrder} + \bar{Q}_2 Q_1 Q_0 \overline{\text{InOrder}}$

$D_0 = \Sigma m(0,1,4,5,9,10,12$,14,15)



$D_0 = \bar{Q}_2 \bar{Q}_0 + \bar{Q}_1 \bar{Q}_0 \text{InOrder} + Q_2 Q_1 \overline{\text{InOrder}} + Q_2 \bar{Q}_0 \overline{\text{InOrder}} + Q_2 Q_1 \bar{Q}_0$

$Q_2, \bar{Q}_2$ → output of FlipFlop D_2
$Q_1, \bar{Q}_1$ → output of FlipFlop D_1
$Q_0, \bar{Q}_0$ → output of FF → D_0

AND|OR|NOT Circuit Diagram for Flip Flop Input