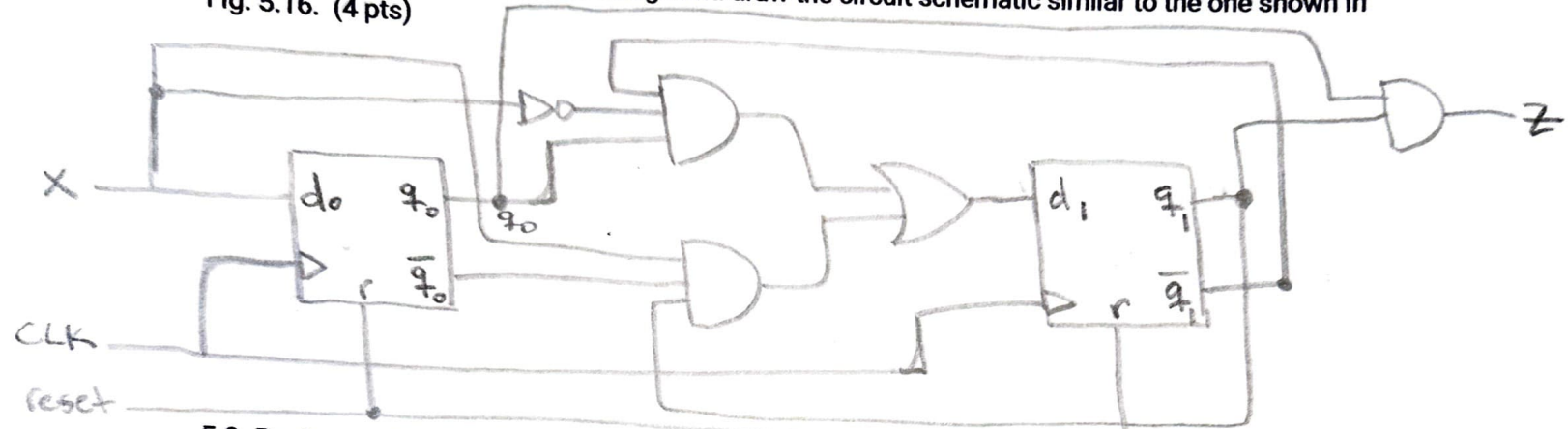
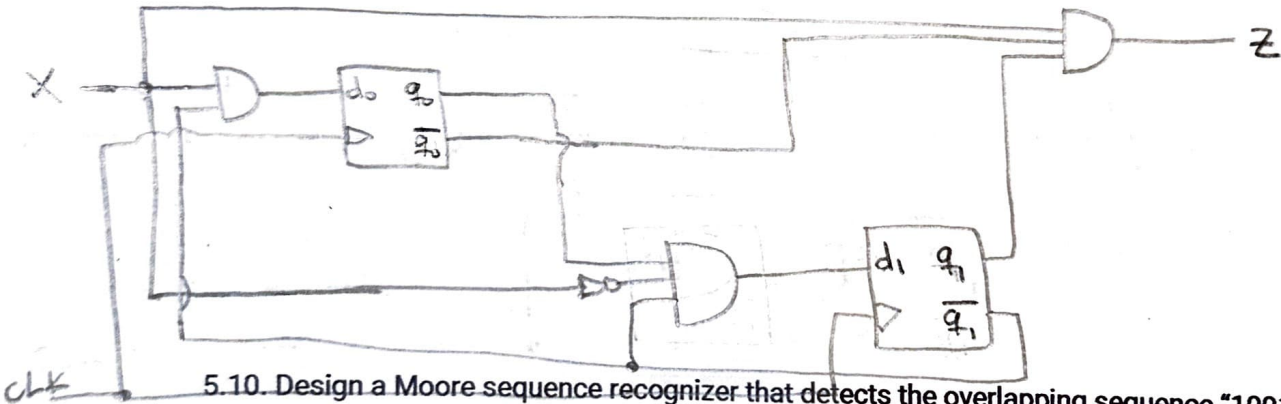


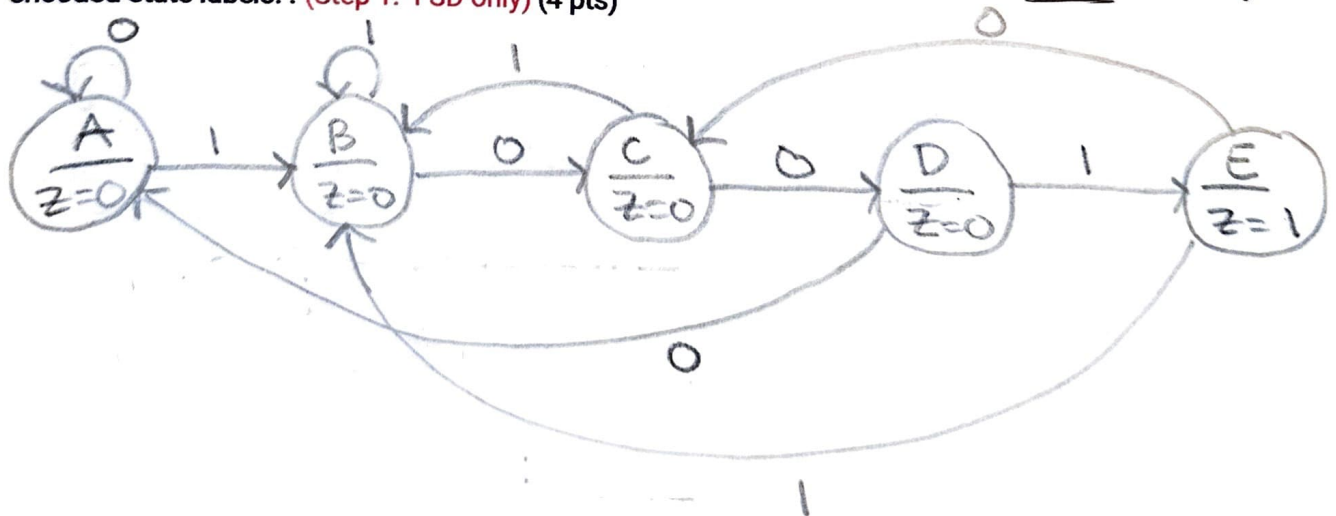
5.8. Design a Moore sequence recognizer that detects the nonoverlapping sequence "101." Use binary encoded state labels and design and draw the circuit schematic similar to the one shown in Fig. 5.16. (4 pts)



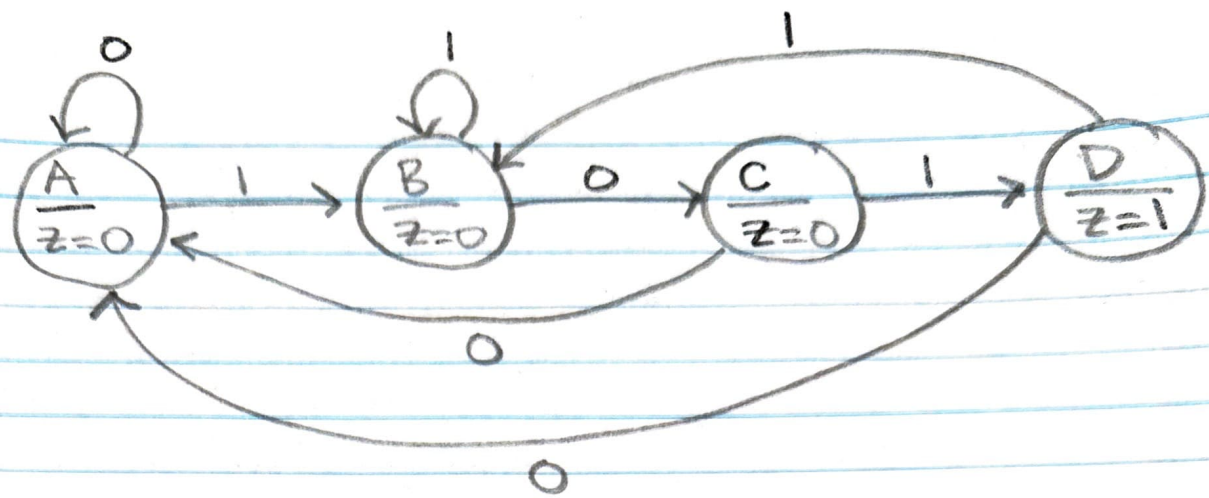
5.9. Design a Mealy sequence recognizer that detects the nonoverlapping sequence "101." Use binary encoded state labels and draw the circuit schematic similar to the one shown in Fig. 5.16. (4 pts)



5.10. Design a Moore sequence recognizer that detects the overlapping sequence "1001." Use binary encoded state labels. . (Step 1. FSD only) (4 pts)



5.8 :



	current state		Input	Output (w.s)		
	$q_1$	$q_0$		$d_1$	$d_0$	
A	0	0	0	0	0	A
	0	0	1	0	1	B
B	0	1	0	1	0	C
	0	1	1	0	1	B
C	1	0	0	0	0	A
	1	0	1	1	1	D
D	1	1	0	0	0	A
	1	1	1	0	1	B

	current state		Output
	$q_1$	$q_0$	$z$
A	0	0	0
B	0	1	0
C	1	0	0
D	1	1	1

$d_1$

$q_1 q_0 \backslash x$	0	1
00	0	0
01	1	0
11	0	0
10	0	1

$d_0$

$q_1 q_0 \backslash x$	0	1
00	0	1
01	0	1
11	0	1
10	0	1

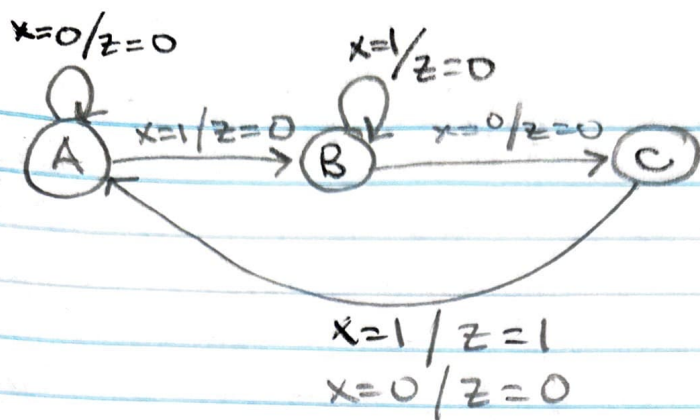
$$d_1 = \bar{q}_1 q_0 \bar{x} + q_1 \bar{q}_0 x$$

$$d_0 = x$$

$$z = q_1 q_0$$



5.9:



101101 nonover  
10101 overlapping

	$q_1$	$q_0$	$x$	$d_1$	$d_0$	$z$
A	0	0	0	0	0	0
	0	0	1	0	1	0
B	0	1	0	1	0	0
	0	1	1	0	1	0
C	1	0	0	0	0	0
	1	0	1	0	0	1
D	1	1	0	0	0	0
	1	1	1	0	0	0

reset

$d_1$ :

$x$	$q_1 q_0$	00	01	11	10
0		0	0	1	0
1		0	0	0	0

$$d_1 = \overline{q_1} q_0 x$$

$$z = \overline{q_0} q_1 x$$

$d_0$ :

$x$	$q_1 q_0$	00	01	11	10
0		0	0	0	0
1		1	1	0	0

$$d_0 = \overline{q_1} \overline{q_0} x + \overline{q_1} q_0 x + q_1 \overline{q_0} x + q_1 q_0 x$$

$$d_0 = x \overline{q_1}$$