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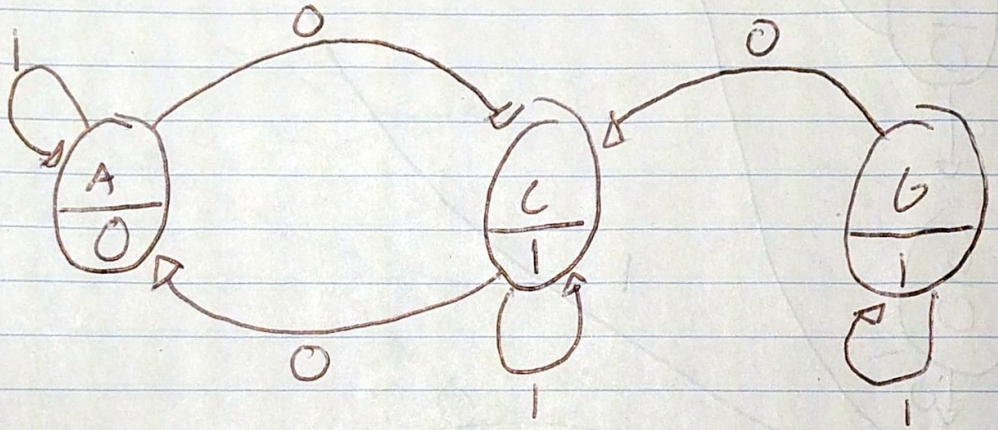
CE100 HW# 5

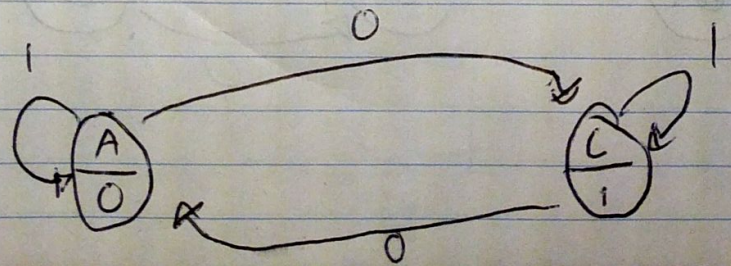
1) $P_0 = (ABCDEFGHJKL)$
$P_1 = (ABFL)(CDHJK)(G)$
A C G

PS	NS		Out	
	x=0	x=1	x=0	x=1
A	C	A	1	0
C	A	C	0	1
G	C	G	1	1

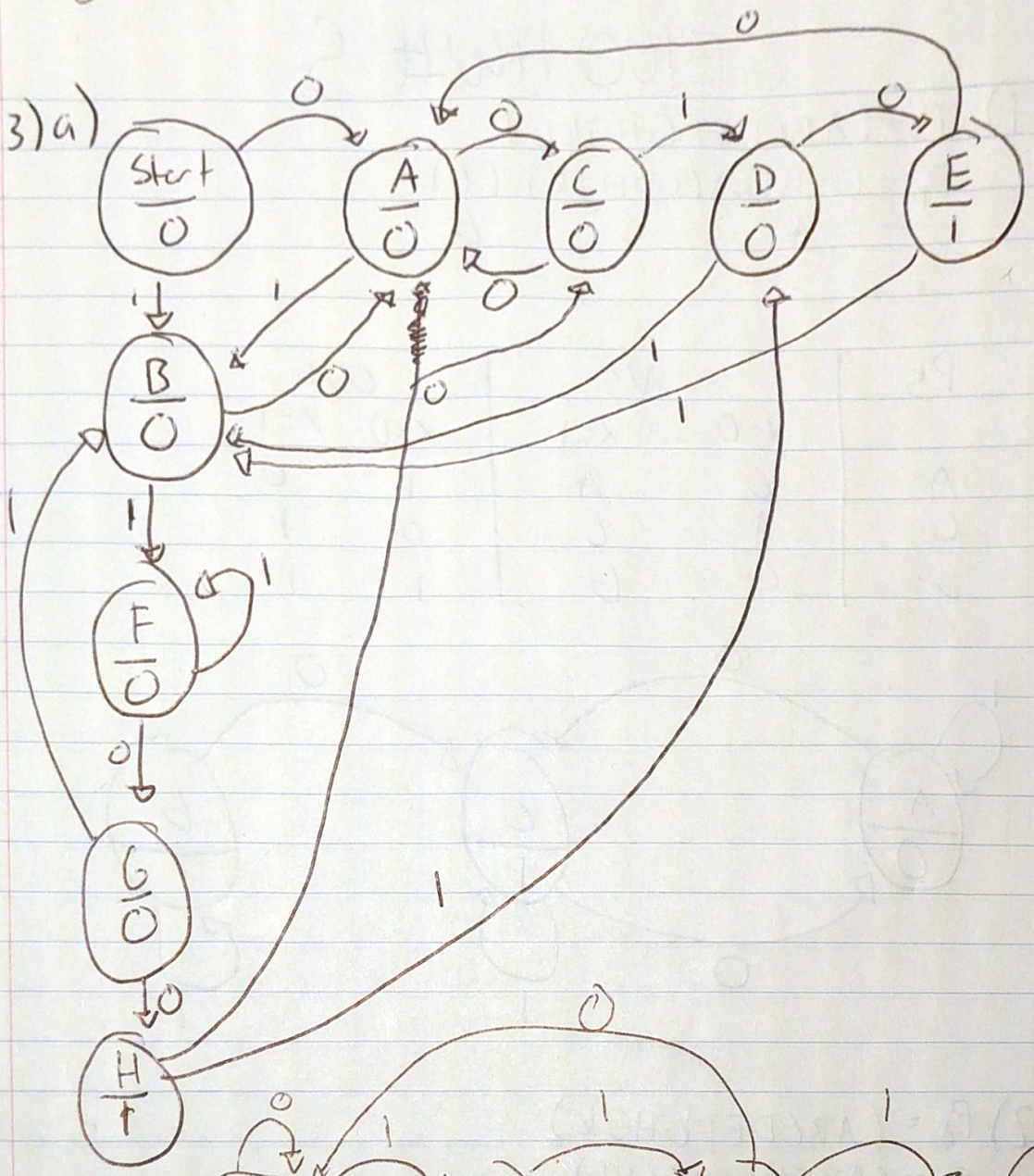


2) $P_0 = (ABCDEFGHJK)$
$P_1 = (ABFJ)(CDEGHK)$
$P_2 = (ABFJ)(CDEGHK)$
A C

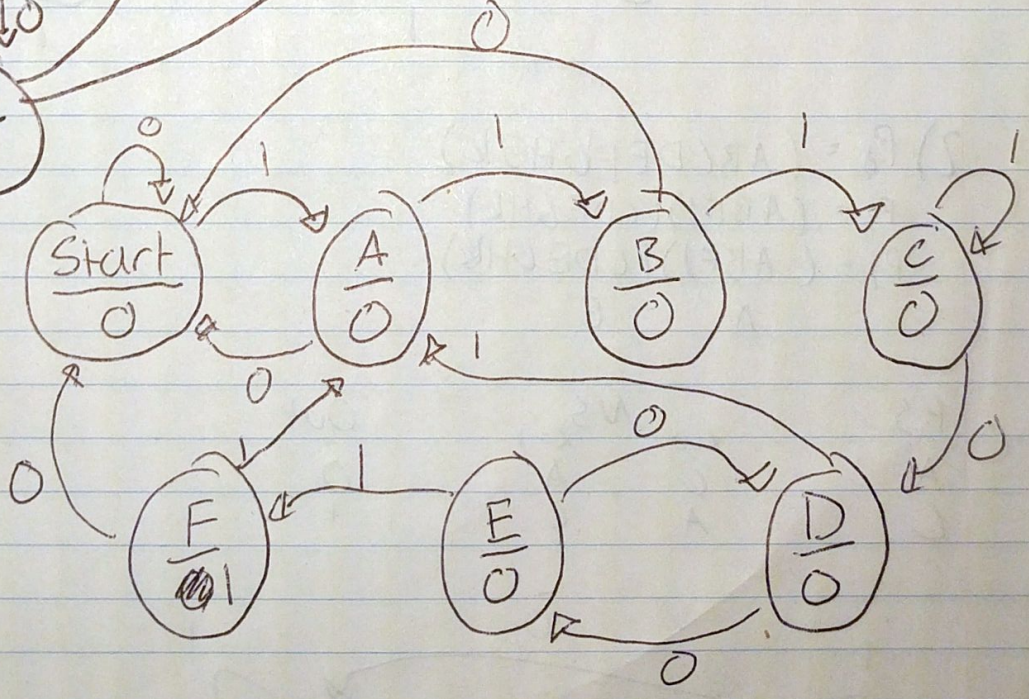
PS	NS x=0	NS x=1	Out
A	C	A	0
C	A	C	1



3) a)

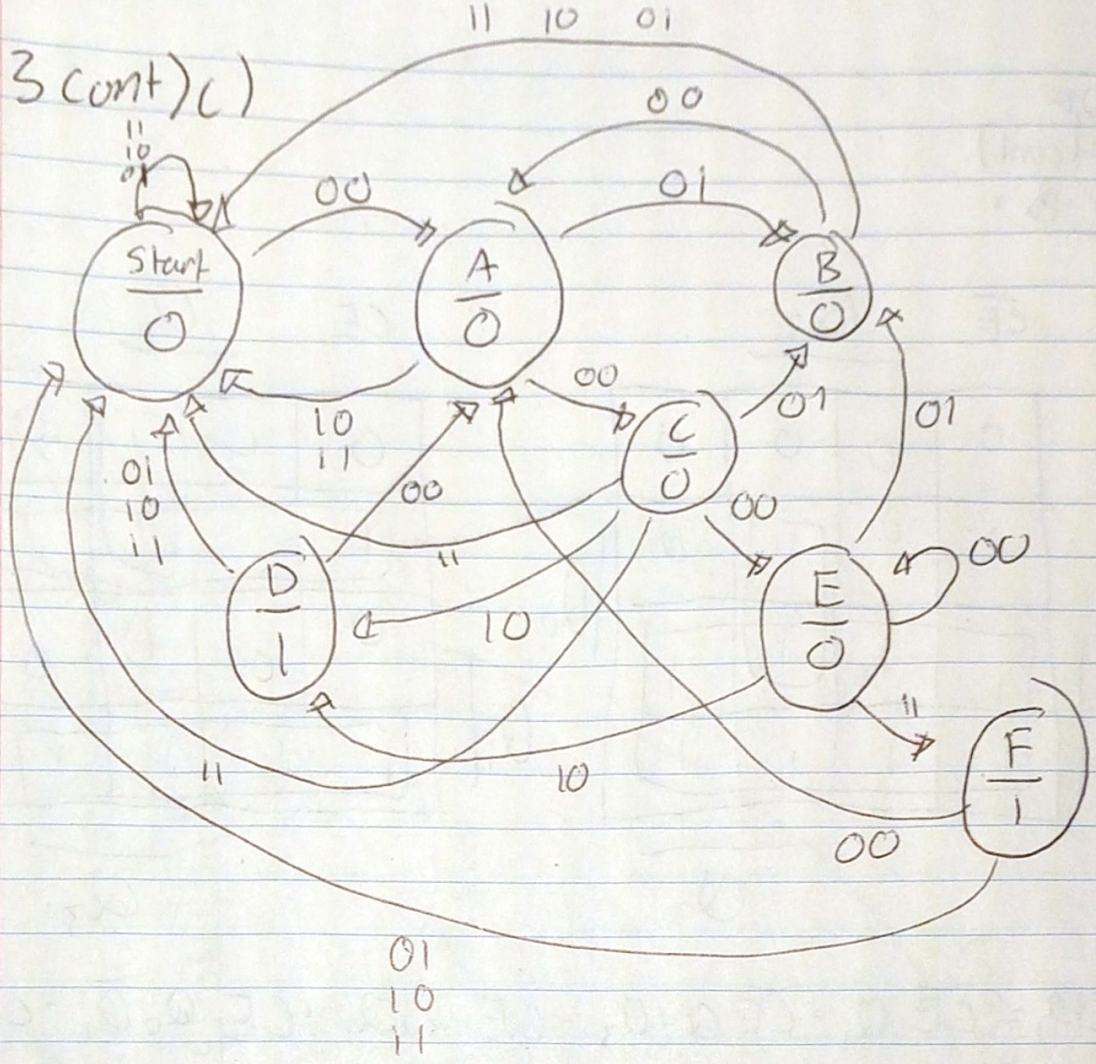


b)



pg 3/5

3 cont) c)



4)

$$C_{D_0} = CE\,\overline{Q_0}\,\overline{Q_1} + CE\,\overline{Q_1}\,Q_2\,\overline{Q_3} + CE\,\overline{Q_0}\,\overline{Q_1}\,\overline{Q_2} + \overline{Q_0}\,Q_1\,Q_2 + \overline{CE}\,Q_0\,\overline{Q_3} + \overline{CE}\,Q_0\,\overline{Q_2}\,Q_3$$

$\overline{CE}$ Q_2

C_{D_0}

0	0	0	0
1	1	0	1
1	1	0	1
0	1	1	0

Q_0 Q_1 Q_3

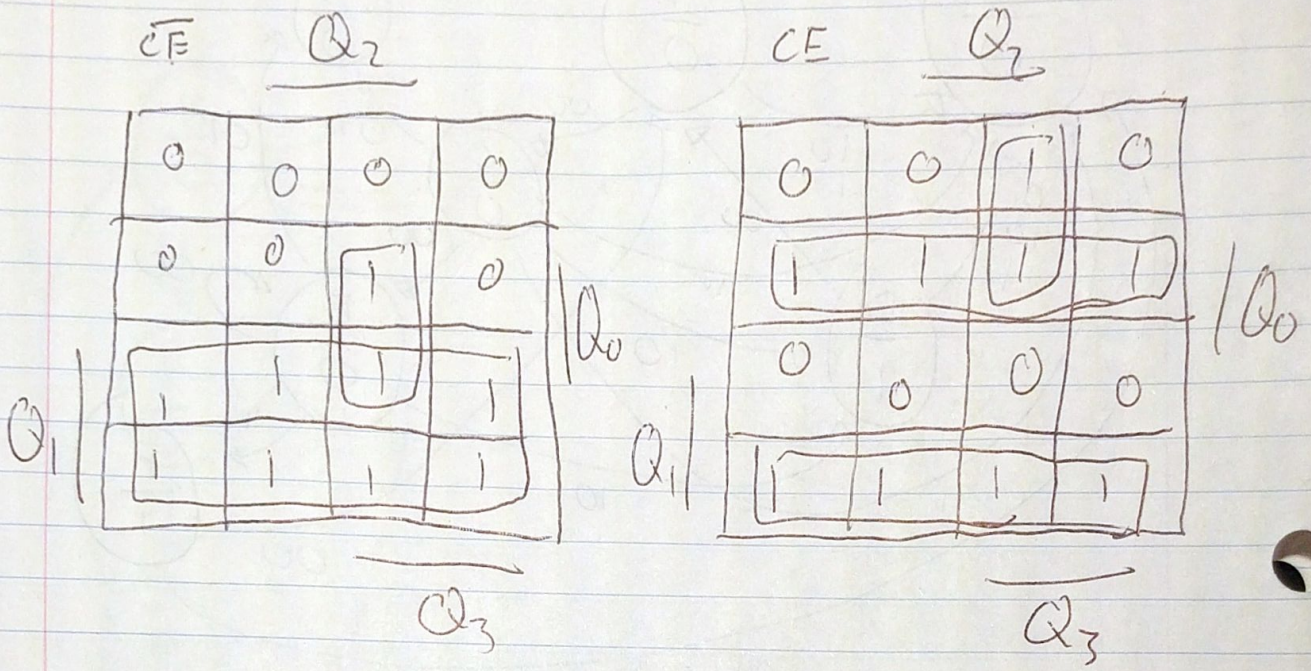
CE Q_2

1	1	0	1
0	1	0	0
0	0	0	0
1	1	1	1

Q_0 Q_1 Q_3

Pg 4/5

D=
4 cont)
CD1 =



$$CD_1 = \overline{CE}\,Q_1 + \overline{CE}\,Q_2Q_3 + CE\,\overline{Q}_0Q_1 + CE\,Q_0\overline{Q}_1 + CE\,\overline{Q}_1Q_2Q_3$$

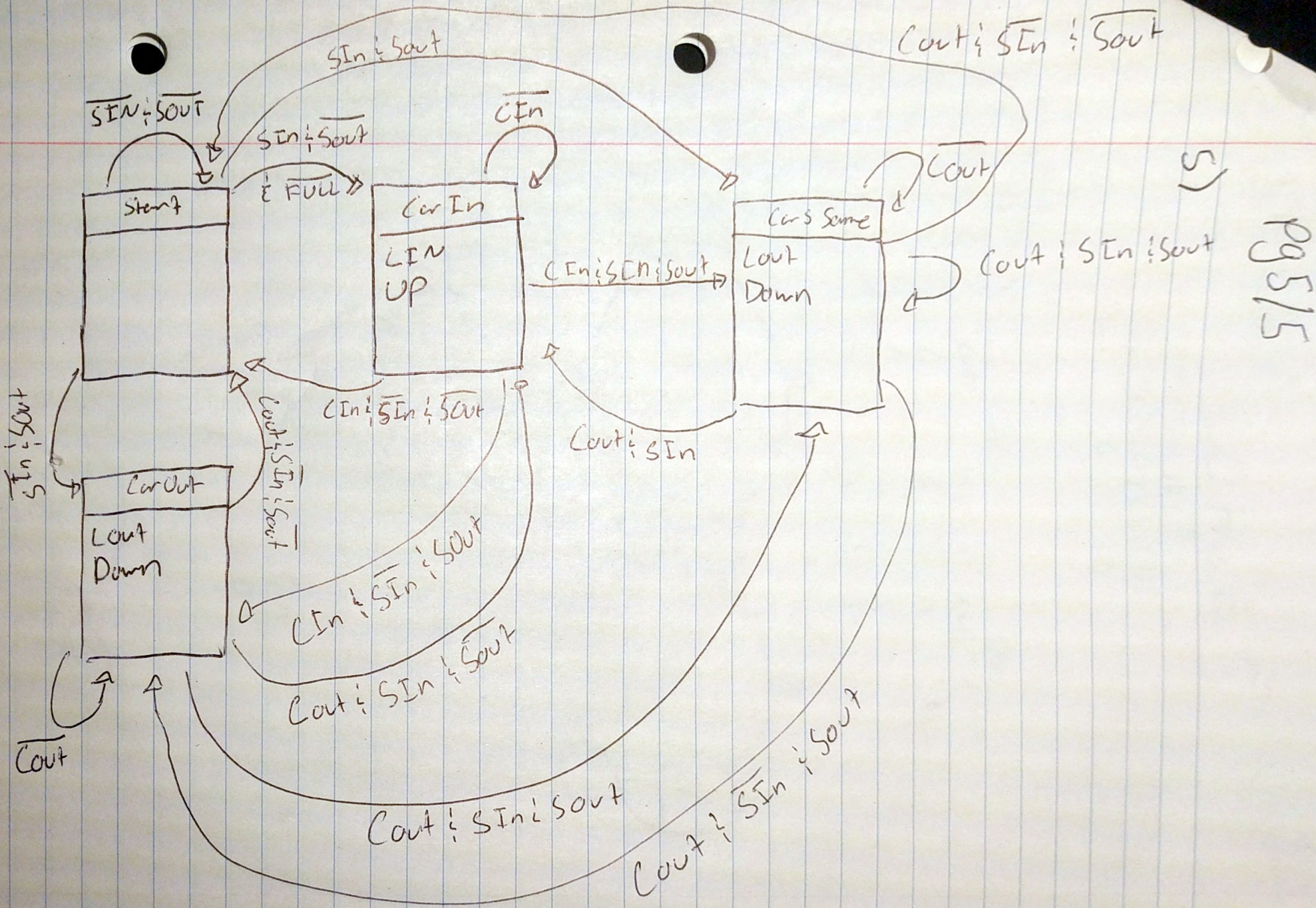
$$CD_2 = \overline{CE}\,Q_2 + \overline{Q}_0Q_2 + \overline{Q}_1Q_2 + CE\,Q_0Q_1\overline{Q}_2$$

$$CD_3 = \overline{CE}\,Q_3 + \overline{Q}_1Q_3 + \overline{Q}_2Q_3 + \overline{Q}_0Q_3 + CE\,Q_0Q_1Q_2\overline{Q}_3$$

$$CD_0 = CE\,\overline{Q}_0Q_1 + CE\,\overline{Q}_1Q_2\overline{Q}_3 + CE\,\overline{Q}_0\overline{Q}_1\overline{Q}_2 + \overline{Q}_0Q_1Q_2 + \overline{CE}\,Q_0Q_3 + \overline{CE}\,Q_0\overline{Q}_2Q_3$$

$$D_0 = (\sim LD\,C_0) + (LD\,In_0)$$
$$D_1 = (\sim LD\,C_1) + (LD\,In_1)$$
$$D_2 = (\sim LD\,C_2) + (LD\,In_2)$$
$$D_3 = (\sim LD\,C_3) + (LD\,In_3)$$

$$TC = Q_0Q_1Q_2Q_3$$



Start
Car In
LIN
UP
Cars Same
Lout
Down
Car Out
Lout
Down
$\overline{SIN}$ & $\overline{SOUT}$
SIn & $\overline{Sout}$
& $\overline{FULL}$
$\overline{CIn}$
CIn & SIn & Sout
Cout & SIn & Sout
Cout & $\overline{SIn}$ & $\overline{Sout}$
CIn & $\overline{SIn}$ & $\overline{Sout}$
Cout & SIn
$\overline{SIn}$ & Sout
Cout & $\overline{SIn}$ & $\overline{Sout}$
CIn & $\overline{SIn}$ & Sout
Cout & SIn & $\overline{Sout}$
$\overline{Cout}$
Cout & SIn & Sout
Cout & $\overline{SIn}$ & Sout

5)

Pg 5/5