

Keith A. Kuntz
 CS42
 Assig. 9
 Fall 2004

$$\begin{array}{r}
 7-2) \quad 10011001 \\
 \quad 11000011 \\
 \hline
 \text{AND} \quad 10000001
 \end{array}$$

$$\begin{array}{r}
 \quad 10011001 \\
 \quad 11000011 \\
 \hline
 \text{OR} \quad 11011011
 \end{array}$$

$$\begin{array}{r}
 \quad 10011001 \\
 \quad 11000011 \\
 \hline
 \text{XOR} \quad 01011010
 \end{array}$$

$$\begin{array}{r}
 \begin{array}{cccccccc} 15 & 14 & 13 & 12 & 11 & 10 & 9 & 8 \end{array} & \begin{array}{cccccccc} 7 & 6 & 5 & 4 & 3 & 2 & 1 & 0 \end{array} \\
 7-3) a) \quad 00110101 & 11001010 \\
 \text{AND} \quad 01010101 & 01010101 \\
 \hline
 \quad 00010101 & 01000000
 \end{array}$$

clear odd bit positions

$$\begin{array}{r}
 b) \quad 00110101 & 11001010 \\
 \text{OR} \quad 00000000 & 00001111 \\
 \hline
 \quad 00110101 & 11001111
 \end{array}$$

set bits 0-4 to 1

$$\begin{array}{r}
 c) \quad 00110101 & 11001010 \\
 \text{XOR} \quad 11111111 & 00000000 \\
 \hline
 \quad 11001010 & 11001010
 \end{array}$$

complement bits 8-15

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7-14 a) Sequence: 0, 1, 2

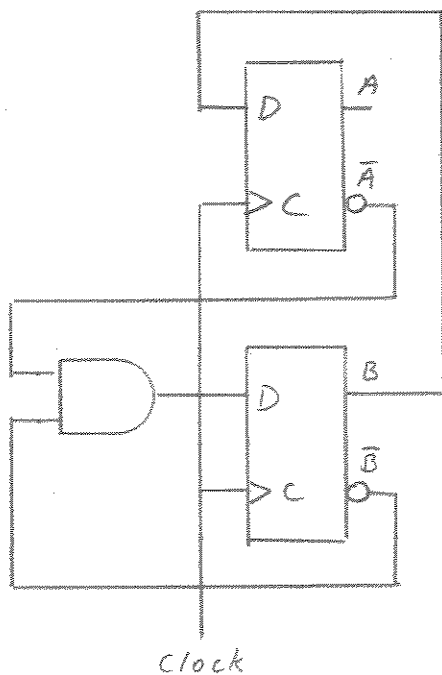
Present State		Next State	
A	B	A	B
0	0	0	1
0	1	1	0
1	0	0	0

$$D_A = A(t+1)$$

$$D_B = B(t+1)$$

$$D_A = B$$

$$D_B = \sum m(0) = \bar{A}\bar{B}$$



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7-14 b) Sequence: 0, 1, 2, 3, 4, 5

Present State ABC	Next State ABC
000	001
001	010
010	011
011	100
100	101
101	000

$$D_A = A\bar{C} + BC$$

	<u>B</u>	
	0	1
<u>A</u>	0	1
	0	1

$$D_A = A\bar{C} + BC$$

$$D_B = \bar{A}\bar{B}C + B\bar{C}$$

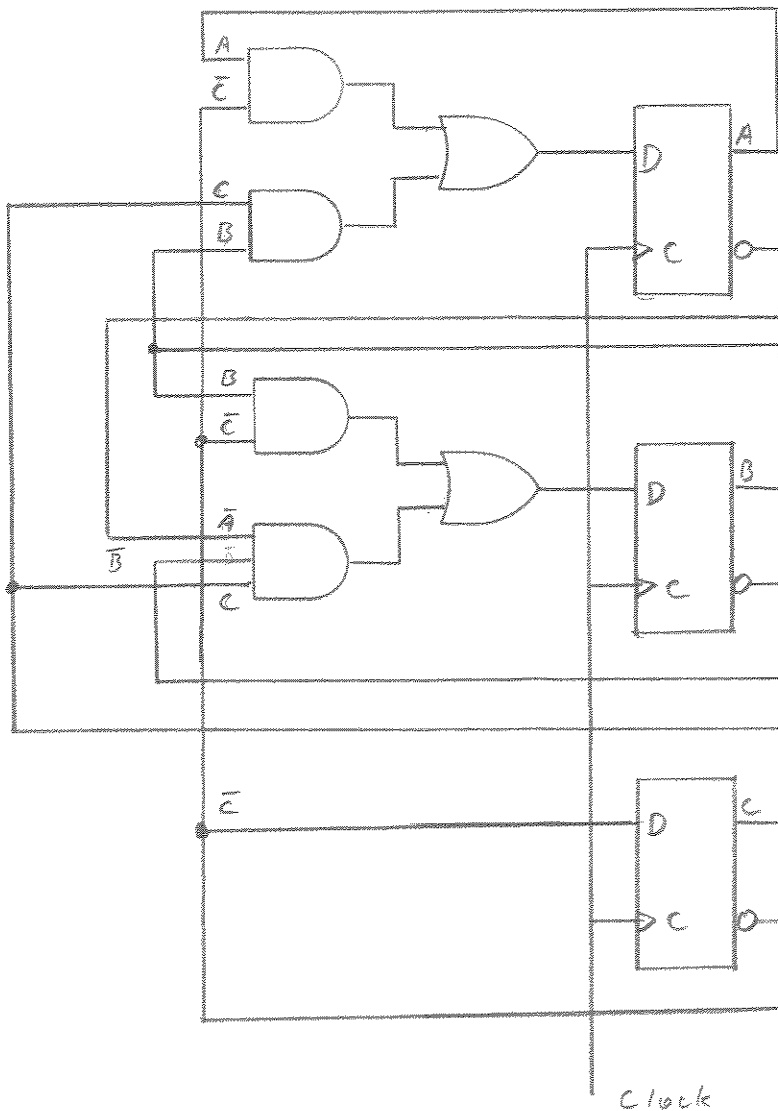
	<u>B</u>	
	0	1
	0	1
<u>A</u>	0	1
	0	1

$$D_B = \bar{A}\bar{B}C + B\bar{C}$$

$$D_C = \bar{C}$$

	<u>B</u>	
	0	1
<u>A</u>	0	1
	0	1

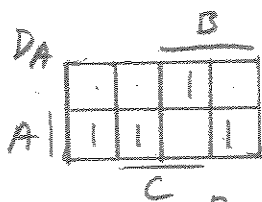
$$D_C = \bar{C}$$



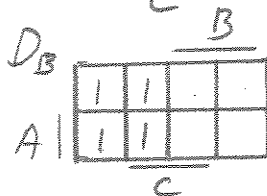
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7-15) sequence: 0, 2, 1, 3, 4, 6, 5, 7

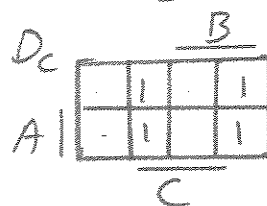
Present state ABC	Next state ABC
000	010
001	011
010	001
011	100
100	110
101	111
110	101
111	000



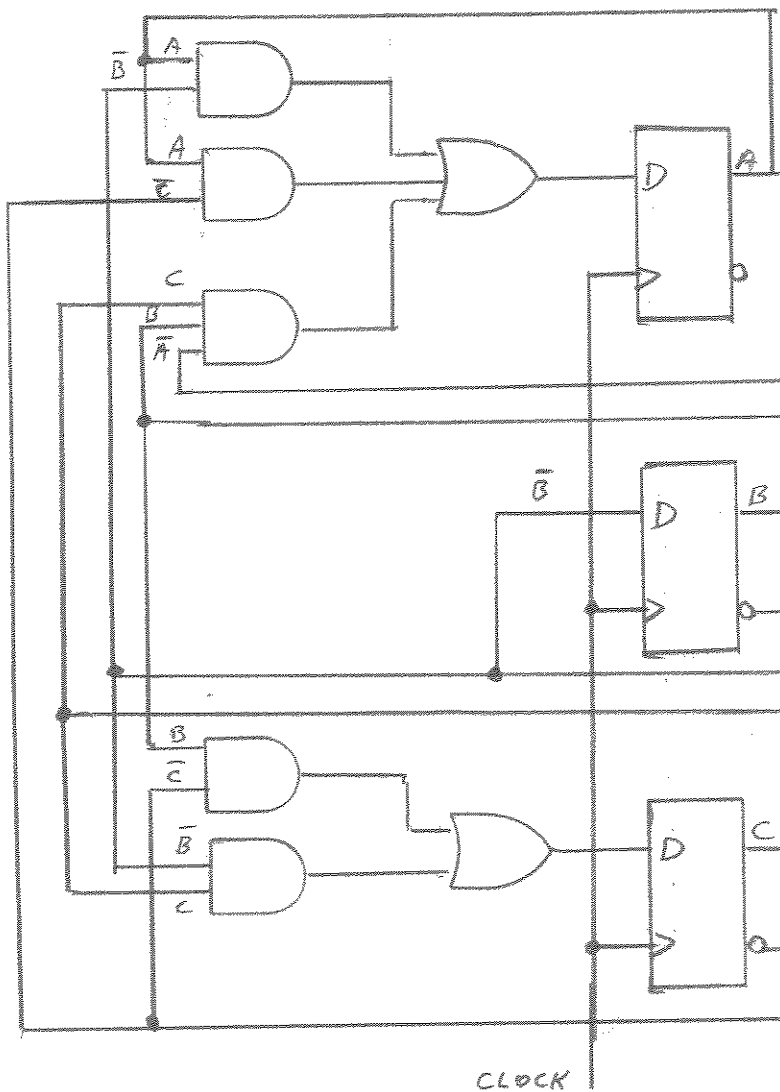
$$D_A = A\bar{B} + A\bar{C} + \bar{A}BC$$



$$D_B = \bar{B}$$



$$D_C = \bar{B}C + B\bar{C}$$



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	Mode Selects		Operation
	S_1	S_0	
7-16)	0	0	No Op
	0	1	Complement
	1	0	Load
	1	1	Reset

