Welcome to my Presentation

Presentation on Digital Logic Design

Presented By:

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Outline

- Question
- Converting Excess-3 to BCD(8421)
- Converting Table Excess-3 to BCD(8421)
- K-Map for A
- K-Map for B
- K-Map for C
- K-Map for D
- Minimized Boolean expressions
- Logic Diagram

My Question is 4

Design of a combinational circuit that converts excess-3 code to BCD with a 4-bit adder and external gates.

Converting Excess-3 to BCD(8421)

- Excess-3 code can be converted back to BCD in the same manner.
- Let A,B,C & D be the bits representing the binary numbers, where D is the LSB and A is the MSB.
- Let w , x , y & z be the bits representing the gray code of the binary numbers, where z is the LSB and w is the MSB.
- The truth table for the conversion is given below.
- The X’s mark don’t care conditions.

Converting Table Excess-3 to BCD(8421)

Excess-3				BCD			
w	x	y	z	A	B	C	D
0	0	0	0	X	X	X	X
0	0	0	1	X	X	X	X
0	0	1	0	X	X	X	X
0	0	1	1	0	0	0	0
0	1	0	0	0	0	0	1
0	1	0	1	0	0	1	0
0	1	1	0	0	0	1	1
0	1	1	1	0	1	0	0
1	0	0	0	0	1	0	1
1	0	0	1	0	1	1	0
1	0	1	0	0	1	1	1
1	0	1	1	1	0	0	0
1	1	0	0	1	0	0	1
1	1	0	1	X	X	X	X
1	1	1	0	X	X	X	X
1	1	1	1	X	X	X	X

K-Map for A

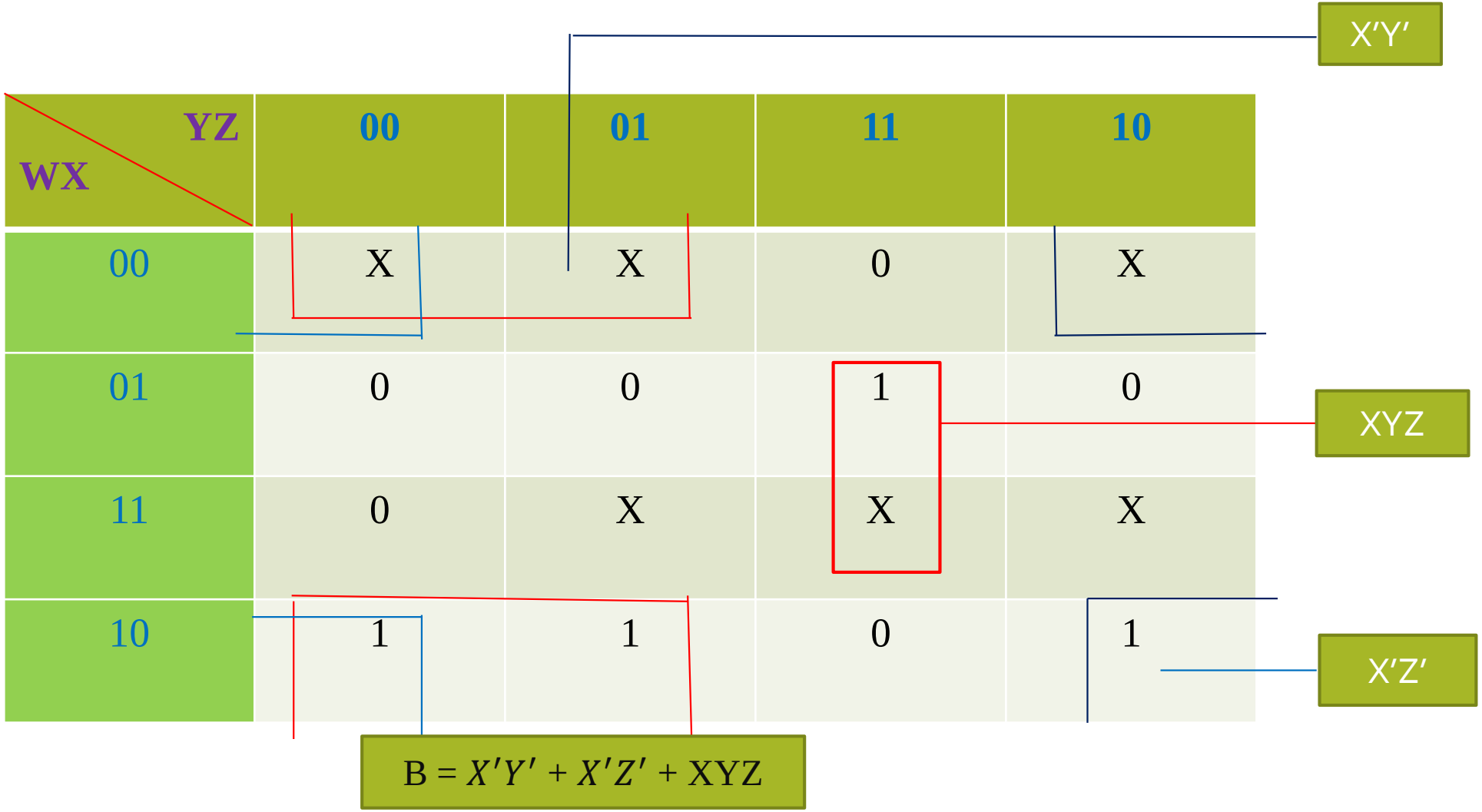
WX \ YZ	00	01	11	10
00	X	X	0	X
01	0	0	0	0
11	1	X	X	X
10	0	0	1	0

WX

WYZ

A = WX + WYZ

K-Map for B


X′Y′
YZ
WX
00
01
11
10
00
X
X
0
X
01
0
0
1
0
11
0
X
X
X
10
1
1
0
1
XYZ
X′Z′
B = X′Y′ + X′Z′ + XYZ

K-Map for C

WX \ YZ	00	01	11	10
00	X	X	0	X
01	0	1	0	1
11	0	X	X	X
10	0	1	0	1

Y′Z

YZ′

C = $Y'Z + Y Z'$

K-Map for D

WX \ YZ	00	01	11	10
00	X	X	0	X
01	1	0	0	1
11	1	X	X	X
10	1	0	0	1

Z′

D = Z'

Minimized Boolean express

- ✓Corresponding minimized Boolean expressions for Excess-3 code bits

$$A = WX + WYZ$$

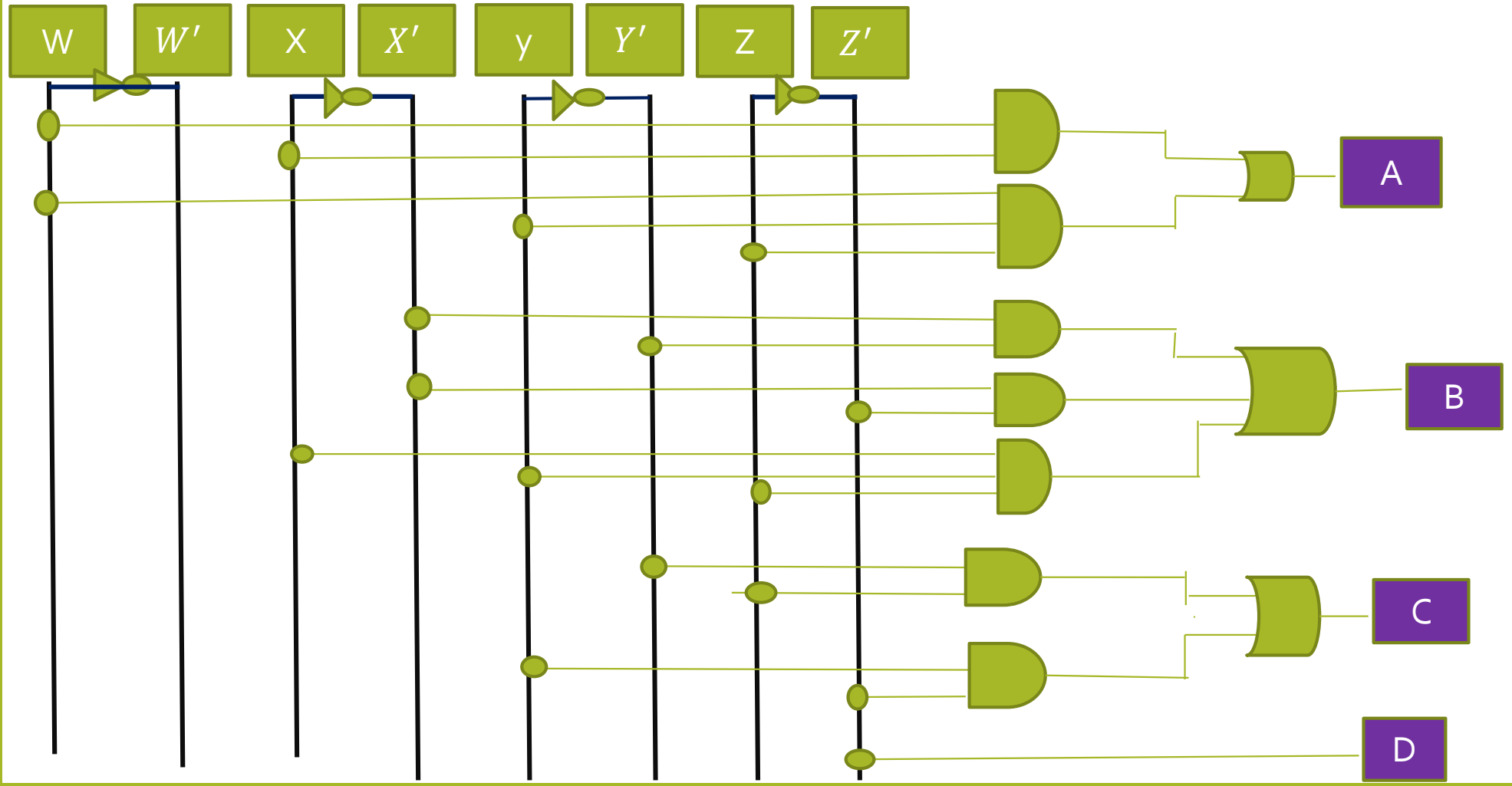
$$B = X'Y' + X'Z' + XYZ$$

$$C = Y'Z + Y Z'$$

$$D = Z'$$

Logic Diagram

A = WX + WYZ, B = $X'Y'$ + $X'Z'$ + XYZ, C = Y'Z + Y Z', D = Z'



Thank You