


9/29/2009 Outline

- HW 5 due 10/1 - Thursday - Problem 4 correction
- Exam 1 - Oct 9th during the Recitation Time
Section 002 = Woodward 120
1 sheet ($8\frac{1}{2} \times 11$) of paper, 1 side for notes
- 5 input KMAP examples
- Decoder overview (if necessary)
 - 2 input / 4 output
 - 3 input / 8 output
- Mux
 - 2:1
 - 4:1
 - 8:1
- Demux N-bit Mux - Slide 46
- Enable Signal 
- Non Ideal Gate Behavior
- Wave Forms

$$\Sigma m\{0, 1, 2, 3, 6, 8, 9, 15\}$$

	ab		
cd	00	01	11
00	1		1
01	1		1
11	1		1
10	1	1	

$$\begin{matrix} \bar{a}\bar{b}\bar{c} \\ \bar{b}\bar{c} \end{matrix}$$

$$f = \bar{a}\bar{b} + \bar{b}\bar{c} + \bar{a}c\bar{d} + abcd$$

Prime Numbers 0-31

$$f(a, b, c, d, e) \quad 2^5 = 32$$

$$= \Sigma m(1, 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31)$$

$2^0 = 1$

	bc		
de	00	01	11
00	0	0	0
01	1	1	1
11	1	1	1
10	1	0	0

	bc		
de	00	01	11
00	0	0	0
01	1	0	1
11	1	1	1
10	0	0	0

AND = 7
OR = 1
NOT = 4

$$a = 0$$

$$a = 1$$

$$f = \bar{a}\bar{b}e + \bar{b}de + \bar{b}\bar{c}e + bc\bar{d}e + \bar{a}\bar{b}\bar{c}d + \bar{a}\bar{c}de + abce$$

$$f(a,b,c,d,e) = \sum m(1, 2, 3, 5, 7, 10, 11, 14, 15, 17, 18, 19, 21, 23, 26, 27, 30, 31)$$

de \ bc	00	01	11	10
00	0	4	12	8
01	1	5	13	9
11	3	7	15	11
10	2	6	14	10

a = 0

de \ bc	00	01	11	10
00	16	20	28	24
01	17	21	29	25
11	19	23	31	27
10	18	22	30	26

a = 1

$$f = bd + \bar{b}e + \bar{c}d$$

a	b	c	d	e
0	0	0	0	0
0	0	0	0	1

⋮

2 inputs

$$2^2 = 4 \text{ rows}$$

$$2^{\binom{2}{2}} = 2^1 = 2 \text{ functions}$$

a	b	f			
0	0	0	1	1	
0	1	0	0	1	
1	0	0	0	0	
1	1	0	0	0	

↑ ↑

0 A NOR B

3 inputs

$$2^3 = 8$$

$$2^{\binom{3}{2}} = 2^3 = 8 \text{ functions}$$

a	b	c
0	0	0
0	0	1
0	1	0
1	0	0

~~1011~~

i_1	i_0
0	0
0	1
1	0
1	1

$d_0 = 1$
 $d_1 = 1$
 $d_2 = 1$
 $d_3 = 1$

else ϕ

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if (i1 == 0 && i0 == 0)
    d0 = 1;
else
    d0 = 0;

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$$d_0 = \overline{i_1} \overline{i_0}$$

$$d_1 = \overline{i_1} i_0$$

$$i_1 = 0 \quad d_0 = 1$$

$$i_0 = 0$$

$$i_1 = 1 \quad d_0 = 0$$

$$i_0 = 0$$

