National Chiao Tung University
Dept. of Computer & Information Science
Intro. to Digital Systems, Spring 1998

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Handout #18
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Sample Solutions to Homework #6

Problems 1–8 are adopted from M. M. Mano and C. R. Kime, *Logic and Computer Design Fundamentals*, Prentice-Hall, Inc., 1997.

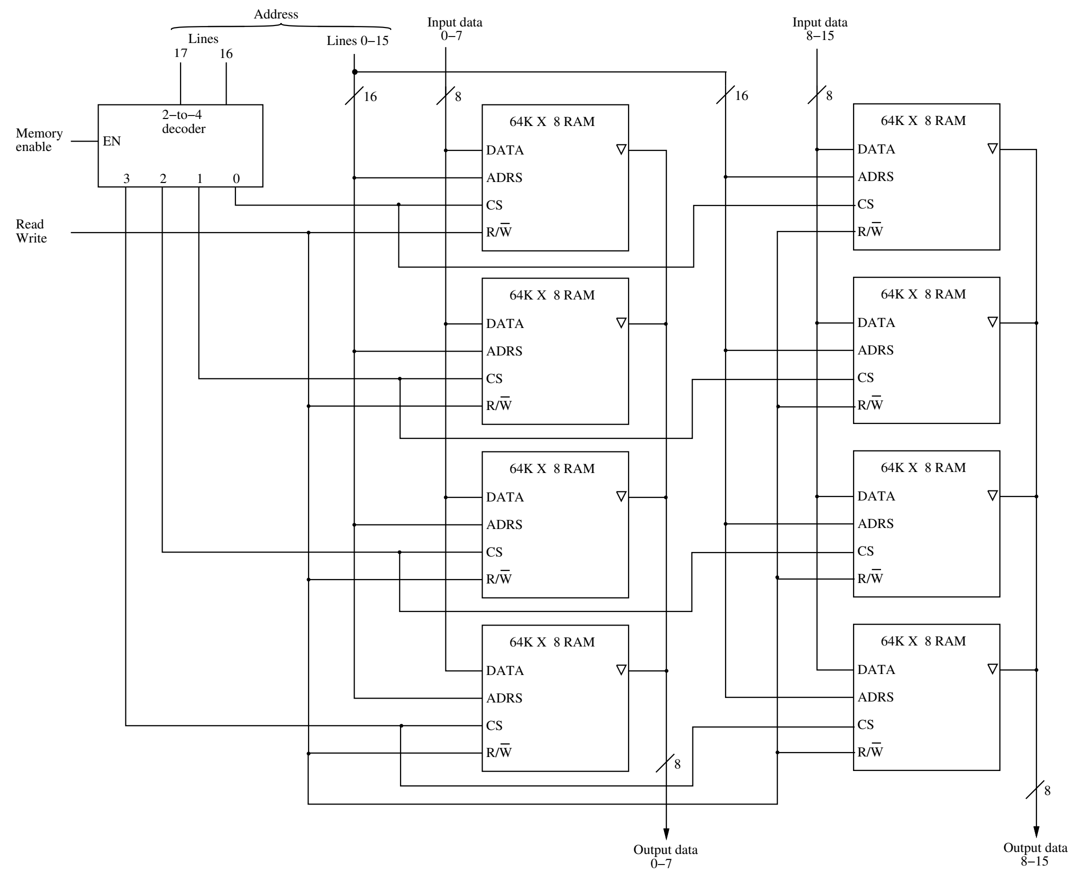
1. Problem 6–1 (c) and (d) (page 303).

(c) address lines: 24, data lines: 32; (d) address lines: 31, data lines: 8. (For DRAMs, the answers for (c) are 12 address lines and 32 data lines. There is no configuration with (d) $2G \times 8$ for DRAMs.)

2. Problem 6–7 (page 304).

(a) 8, (b) 18, 15, (c) 3, 3-to-8.

3. Problem 6–8 (page 304).



4. Problem 6–10 (page 304).

100101000111010

5. Problem 6–11 (a) and (c) (page 304).

(a) 01011010, (c) 11110100

6. Problem 6–13 (page 304).

(a) 0100101
(b) $C_1 = 0, C_2 = 0, C_4 = 0$
(c) $(C_4C_2C_1) = (101)_2 = 5$; bit 5 is complemented.
(d) Correct word = 10100101 ($P = 1$), Word received = 10000001. $P = 0$ and $C \neq 0$ implies a double error.

7. Problem 6–17 (a) and (c) (page 305).

(a) 512×5, (c) $65,536 \times 14$

8. Problem 6–20 (page 306).

Minimum # of terms = 4.

Product term		Inputs			Outputs			
		X	Y	Z	A	B	C	D
XZ	1	-	1	1	1	1	-	1
XY	2	1	1	-	1	-	-	-
$\bar{X}Y$	3	0	1	-	-	1	1	1
$X\bar{Y}\bar{Z}$	4	1	0	0	-	-	1	1