

Computer Systems: *A Programmer's Perspective*

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Chapter 2

Practice Problems 2.1:

A. Covert to binary: 0x39A7F8

001110011010011111111000

B. Covert to Hexadecimal: *1100100101111011*

0xC97B

C. Covert to binary: 0xD5E4C

11010101111001001100

D. Covert to Hexadecimal: *1001101110011110110101*

0x26E7B5

Practice Problems 2.2:

n	2^n Decimal	2^n Hexadecimal
9	512	0x200
19	524,288	0x80000
14	16,384	0x4000
16	65,536	0x10000
17	131,072	0x20000
5	32	0x20
7	128	0x80

Practice Problems 2.3:

Decimal	Binary	Hexadecimal
0	<i>0000 0000</i>	0x00
167	<i>1010 0111</i>	0xA7
62	<i>0011 1110</i>	0x3E
188	<i>1011 1100</i>	0xBC
55	<i>0011 0111</i>	0x37
136	<i>1000 1000</i>	0x88
243	<i>1111 0011</i>	0xF3
82	<i>0101 0010</i>	0x52
172	<i>1010 1100</i>	0xAC
231	<i>1110 0111</i>	0xE7

Practice Problems 2.4:

- A. $0x503C + 0x8 = 0x5044$
- B. $0x503C - 0x40 = 0x4FFC$
- C. $0x503C + 64 = 0x507C$
- D. $0x50EA \oplus 0x503C = 0xAE$

Practice Problems 2.8:

Operation	Results
<i>a</i>	<i>01101001</i>
<i>b</i>	<i>01010101</i>
$\sim a$	<i>10010110</i>
$\sim b$	<i>10101010</i>
$a \& b$	<i>01000001</i>
$a \parallel b$	<i>01111101</i>
$a \oplus b$	<i>00111100</i>

Practice Problems 2.9:

A.

R	G	B	Color	Complement
0	0	0	Black	White
0	0	1	Blue	Yellow
0	1	0	Green	Magenta
0	1	1	Cyan	Red
1	0	0	Red	Cyan
1	0	1	Magenta	Green
1	1	0	Yellow	Blue
1	1	1	White	Black

B. Boolean Operations on colors:

$\text{Blue} \parallel \text{Green} = \text{Cyan}$
 $\text{Yellow} \text{ } \text{Cyan} = \text{Green}$
 $\text{Red} \oplus \text{Magenta} = \text{Blue}$

Practice Problems 2.16:

x		x << 3		(Logical) x >> 2		(Arithmetic) x >> 2	
Hex	Binary	Hex	Binary	Hex	Binary	Hex	Binary
0xC3	11000011	0x18	00011000	0x30	00110000	0xF0	11110000
0x75	01110101	0xA8	10101000	0x1D	00011101	0x1D	00011101
0x87	10000111	0x38	00111000	0x21	00100001	0xE1	11100001
0x66	01100110	0x30	00110000	0x19	00011001	0x19	00011001