floating-point format: (a) $0\overline{111110000101011}$ (b) $\overline{1001100000011000}$

Ⓐ $1.111100001010 11 \times 2^{14}$ $141 = 1000 1101$

$1111 0000 1010 11 00000000$, $1000 1101$, 0

Ⓑ $1.10000011000 \times 2^{11}$ $138 = 10001010$

$1.100000110000000000000000$, 10001010 , 1

Section 2-8 Hexadecimal Numbers

37. Convert each hex no. to binary:

(a) 38_{16}

3	8
0011	1000

00111000

(b) 59_{16}

5	9
0101	1001

01011001

(c) $A14_{16}$

A	1	4
1010	0001	0100

101000010100

(d) $5C8_{16}$

5	C	8
0101	1100	1000

010111001000

(e) 4100_{16}

4	1	0	0
0100	0001	0000	0000

0100000100000000

(f) $FB17_{16}$

F	B	1	7
1111	1011	0001	0111

1111101100010111

(g) $8A9D_{16}$

8	A	9	D
1000	1010	1001	1101

1000101010011101

39. convert each hex. no. to decimal:

(a) 23_{16}
$= (2 \times 16) + (3 \times 1)$
$= 32 + 3$
$= 35_{10}$

(b) 92_{16}
$= (9 \times 16) + (2 \times 1)$
$= 144 + 2$
$= 146_{10}$

(c) $1A_{16}$
$= (1 \times 16) + (10 \times 1)$
$= 16 + 10$
$= 26_{10}$

(d) $8D_{16}$
$= (8 \times 16) + (13 \times 1)$
$= 128 + 13$
$= 141_{10}$

(e) $F3_{16}$
$= (15 \times 16) + (3 \times 1)$
$= 240 + 3$
$= 243_{10}$

(f) EB_{16}
$= (14 \times 16) + (11 \times 1)$
$= 224 + 11$
$= 235_{10}$

40. convert each decimal no. to hex.

(a) 8

$$\frac{8}{16} = 0.5 \times 16 = 8_{16}$$

$$8_{16}$$

(b) 14

$$\frac{14}{16} = 0.875 \times 16 = 14_{10}$$

$$E_{16}$$

(c) 33

$$\frac{33}{16} = 2.0625 \to .0625 \times 16 = 1$$

$$\frac{2}{16} = .125 \to .125 \times 16 = 2$$

$$21_{16}$$

(d) 52

$$\frac{52}{16} = 3.25 \to .25 \times 16 = 4$$

$$\frac{3}{16} = 0.1875 \to .1875 \times 16 = 3$$

$$34_{16}$$

(e) 284

$$\frac{284}{16} = 17.75 \to .75 \times 16 = 12_{10}$$

$$\frac{17}{16} = 1.0625 \to .0625 \times 16 = 1_{10}$$

$$\frac{1}{16} = 0.0625 \to .0625 \times 16 = 1_{10}$$

$$11C_{16}$$

(f) 2890

$$\frac{2890}{16} = 180.625 \to .625 \times 16 = 10$$

$$\frac{180}{16} = 11.25 \to .25 \times 16 = 4$$

$$\frac{11}{16} = .6875 \to .6875 \times 16 = 11$$

$$B4A_{16}$$

(g) 4019

$$\frac{4019}{16} = 251.1875 \to .1875 \times 16 = 3$$

$$\frac{251}{16} = 15.6875 \to .6875 \times 16 = 11$$

$$\frac{15}{16} = 0.9375 \to .9375 \times 16 = 15$$

$$FB3_{16}$$

(h) 6500

$$\frac{6500}{16} = 406.25 \to .25 \times 16 = 4$$

$$\frac{406}{16} = 25.375 \to .375 \times 16 = 6$$

$$\frac{25}{16} = 1.5625 \to .5625 \times 16 = 9$$

$$\frac{1}{16} = 0.0625 \to .0625 \times 16 = 1$$

$$1964_{16}$$

Section 2-10 Binary Coded Decimal

50. convert each BCD numbers to decimal:

(a) 0001

1

(b) 0110

6

(c) 1001

9

(d) 0001 1000

1   8

(e) 0001 1001

1   9

(f) 0011 0010

3   2

(g) 0100 0101

4   5

(h) 1001 1000

9   8

(i) 1000 0111 0000

8   7   0

Section 2-11 Digital Codes

56. convert each binary to Gray code:

(a) 1 1011

$$1 \to 1 \to 0 \to 1 \to 1$$
$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$
$$1 \quad 0 \quad 1 \quad 1 \quad 0$$

1 0110

(b) 100 1010

$$1 \to 0 \to 0 \to 1 \to 0 \to 1 \to 0$$
$$\downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow \quad \downarrow$$
$$1 \quad 1 \quad 0 \quad 1 \quad 1 \quad 1 \quad 1$$

110 1111

(c) 1111 0111 0110

$$1 \to 1 \to 1 \to 1 \to 0 \to 1 \to 1 \to 1 \to 0 \to 1 \to 1 \to 1 \to 0$$
$$\downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow \downarrow$$
$$1 \quad 0 \quad 0 \quad 0 \quad 1 \quad 1 \quad 0 \quad 0 \quad 1 \quad 1 \quad 0 \quad 0 \quad 1$$

1000 1100 1 1001

57. Convert each Gray to Binary

(a) 1010

1 0 1 0
1 1 0 0

(b) 00010

0 0 0 1 0
0 0 0 1 1
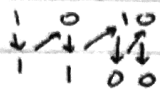
(c) 1100010001
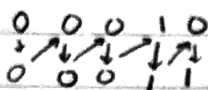
1 1 0 0 0 0 1 0 0 0 1
1 0 0 0 0 0 1 1 1 1 0
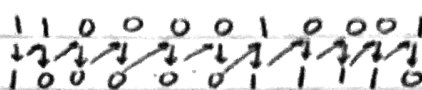
60. Decode ASCII coded message

19 strings

1 - H	5 - o	9 - o	13 - r	17 - o
2 - e	6 - .	10 - w	14 - e	18 - u
3 - l	7 - "space"	11 - "space"	15 - "space"	19 - ?
4 - l	8 - H	12 - a	16 - y	

Hello. How are you?

Section 2-12   Error Codes

63. Determine which of the following even parity codes are in ~~order~~ error.

(a) 10011010

1's in even parity are 4

no error because even no.'s of 1

parity code is correct

(b) 01101010

1's in even parity are 5

an error bc odd no.'s of 1

parity code is incorrect

(c) 1011111101000101010

1's in even parity are 10

no error because even no's of 1

parity code is correct