

Homework #2

37) a) $38_{16} = 00111000$

e) $4100_{16} = 0100000100000000$

b) $59_{16} = 01011001$

f) $F817_{16} = 11110110001011$

c) $A14_{16} = 101000010100$

g) $8AAD_{16} = 1000101010011101$

d) $5C8_{16} = 010111001000$

39) a) 23_{16}

$00100011 = 2^0 + 2^1 + 2^5 = 1 + 2 + 32 = 35$

b) 92_{16}

$10010010 = 2^1 + 2^4 + 2^7 = 2 + 16 + 128 = 146$

c) $1A_{16}$

$00011010 = 2^1 + 2^3 + 2^4 = 2 + 8 + 16 = 26$

d) $8D_{16}$

$10001101 = 2^0 + 2^2 + 2^3 + 2^7 = 1 + 4 + 8 + 128 = 141$

e) $F3_{16}$

$11110011 = 2^0 + 2^1 + 2^4 + 2^5 + 2^6 + 2^7 = 1 + 2 + 16 + 32 + 64 + 128 = 243$

f) EB_{16}

$11101011 = 2^0 + 2^1 + 2^3 + 2^5 + 2^6 + 2^7 = 1 + 2 + 8 + 32 + 64 + 128 = 235$

g) $5C2_{16}$

$01011000010 = 2^1 + 2^4 + 2^7 + 2^8 + 2^{10} = 2 + 16 + 128 + 256 + 1024 = 1474$

h) 700_{16}

$011100000000 = 2^8 + 2^9 + 2^{10} = 256 + 512 + 1024 = 1792$

40) a) $\frac{8}{16} = 0.5 \times 16 = 8$

e) $\frac{284}{16} = 17.75 > 16 = C$

b) $\frac{14}{16} = 0.875 \times 16 = E$

$\frac{17}{16} = 1.0625 \times 16 = 1$

c) $\frac{33}{16} = 2.0625 \times 16 = 1$

$\frac{1}{16} = 0.0625 \times 16 = 1$

$\frac{2}{16} = 0.125 \times 16 = 2$

f) $\frac{2890}{16} = 180.625 \times 16 = A$

d) $\frac{52}{16} = 3.25 \times 16 = 4$

$\frac{180}{16} = 11.25 \times 16 = 4$

$\frac{3}{16} = 0.1875 \times 16 = 3$

$\frac{11}{16} = 0.6875 \times 16 = B$

$$\begin{aligned} g) \frac{4019}{16} &= 251.1875 \times 16 = 3 \\ \frac{251}{16} &= 15.6875 \times 16 = B \\ \frac{15}{16} &= 0.9375 \times 16 = F \end{aligned} \quad \left. \begin{array}{l} \\ \\ \end{array} \right\} FB3$$

$$\begin{aligned} h) \frac{6500}{16} &= 406.25 \times 16 = 4 \\ \frac{406}{16} &= 25.375 \times 16 = 6 \\ \frac{25}{16} &= 1.5625 \times 16 = 9 \\ \frac{1}{16} &= 0.0625 \times 16 = 1 \end{aligned} \quad \left. \begin{array}{l} \\ \\ \\ \end{array} \right\} 1964$$

5d) a) 0001 = 1

b) 0110 = 6

c) 1001 = 9

d) $\underbrace{0001}_1 \underbrace{1000}_8$

e) $\underbrace{0001}_1 \underbrace{1001}_9$

f) $\underbrace{0011}_3 \underbrace{0010}_2$

g) $\underbrace{0100}_4 \underbrace{0101}_5$

h) $\underbrace{1001}_9 \underbrace{1000}_8$

i) $\underbrace{10000}_8 \underbrace{1110000}_7$

5b) a) 11011 = 10110

b) 1001010 = 110111

c) 111101110110 = 1000110011001

57) a) 11010
= 1100

b) 00010
= 00011

c) 11000010001
= 10000011110

60) 1001000 H 1100101 e 1101100 l 1101100 l 1101111 o 0101110 .

0100000 Space 1001000 H 1101111 o 1110111 w 0100000 Space 1100001 a

1110010 r 1100101 e 0100000 Space 1111001 y 1101111 o 1110101 u

0111111 ? = Hello. How are you?

63) a) 100110010 = even

b) 011101010 = error

c) 1011111010001010 = even