(4) Convert Hex to Decimal where Hex is stored as 32 bit 2s complement Int.

a) 0x00000006

0x00 00 00 C6 = 11 00 01 10

Flip Bits

00 11 10 01

Add 1

00 11 10 10 ⇒ 198

b) 0xFFFFFEC4

0xFFFFFEC4 = 1111 1111 1111 1111 1111 1110 1100 0100

Flip Bits

0000 0000 0000 0000 0000 0001 0011 1011

Add 1

0001 0011 1100 = 316

3 7 6 5 4 3 2 1 0

C) 0xFFFFFFFF

0xFFFFFFFF = 1111 1111 1111 1111 1111 1111 1111 1111

Flip Bits

0000 0000 0000 0000 0000 0000 0000 0000

Add 1

0000 0000 0000 0000 0000 0000 0000 0001

= -1

(5) Convert The Following Hex values to Decimal encoded with single precision

a) 0x80000000 ⇒ -0.0

3 2 1 0

Only sign Bit

10 11 12 13 14 15

a b c d e f

b) 0x3FC00000 ⇒ 1.5

7 6 5 4 3 2 1 0

= 0 | 01111111 | 10000000000000000000

Exponent: 0

m = 1.1 1.1 ⇒ 1.5

c) 0xC1340000 ⇒ -11.25

7 6 5 4 3 2 1 0

= 1 | 10000010 | 01101000000000000000000

exp Frac

m = 1.01101

E-3 ^{311} $1011.01 \Rightarrow 11.25$

⑥ Convert The Following decimal to Hex

a) 1.0

0x3F80 00 00

sign bit

1 = 0b1

0.0 = 0b0

1.0

$127 + 0 = 127 \Rightarrow 0b01111111$

0 | 01 | 11 | 1 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000

3 F 8 0 0 0 0 0

b) 16.5

0x 41 84 00 00

16 = 0b10000

0.5 = 0b1

10000.1

1.00001×2^4

Signed bit ✓

$127 + 4 = 131 \Rightarrow$

0 | 10 | 00 | 00 | 1000 | 0100 | 00....

4 1 8 4

c) -314.75

0xC3 9D 60 00

Signed bit = 1

exponent = 10000(11)

sign bit

1

314 = 0b100111010

0.75 = 0b11

100111010.11

$1.00111010 11 \times 2^8$

$127 + 8 = 135 \Rightarrow 10000111$

1 | 100 | 0011 | 1001 | 1101 | 0110 | 0000 | ...

12 3 9 D 6 0