

HW#2

1) a. ~~0x00~~ 0xCAFE

C	A	F	E
1100	1010	1111	1110 < 0
1100	1010	1111	1101
0011	0101	0000	0010

$$\therefore 0xCAFE = -(3 \times 16^3 + 5 \times 16^2 + 0 \times 16 + 2)_{\text{ten}}$$

$$= -13570_{\text{ten}}$$

b. ~~0x4DAD~~

4	D	A	D
0100	1101	1010	1101 > 0

$$\therefore 0x4DAD = 4 \times 16^3 + 13 \times 16^2 + 10 \times 16 + 13_{\text{ten}}$$

$$= 19885_{\text{ten}}$$

c. ~~0xFACE~~

F	A	C	E
1111	1010	1100	1110 < 0
1111	1010	1100	1101
0000	0101	0011	0010

$$\therefore 0xFADE = -(0 \times 16^3 + 5 \times 16^2 + 3 \times 16 + 2)_{\text{ten}}$$

$$= -1330_{\text{ten}}$$

2) a. -1314_{ten}

1314	
290	1x1024
290	0x512
34	1x256
34	0x128
34	0x64
2	1x32
2	0x16
2	0x8

2	0x4
0	0x2
0	0x1

$$1314_{\text{ten}} = 10100100010_{\text{two}}$$

$$= 0x00000522$$

$$\therefore 1314_{\text{ten}} = 01010010010_{\text{two}}$$

$$\therefore -1314_{\text{ten}} = 10101101110_{\text{two}}$$

A D E

$$\therefore -1314_{\text{ten}} = 0xFFFFFE$$

Summary

CUE

$$b. 0.46875$$

$$\therefore 0.46875 = 0.0111011101110111 \dots_{\text{two}}$$

$$= (-1)^0 \times 1.111 \times 2^{-1}$$

0.46875

0.46875

0.46875	0x25
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24875 (K25)

0.09375 | 1x0.125

$$0.03125 \times 0.0625$$

0 | 1x2.03125

$$0 \quad | \quad 0 \times 0.015625$$

1

$$\text{Fraction} = \frac{111000}{20}$$

$$\begin{aligned}\text{Exponent} &= -2 + 127 \text{ km} \\ &= 125 \text{ km}\end{aligned}$$

$$= 0111101_{\text{two}}$$

125 |

61	1x64
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$$\begin{array}{r|l} 29 & 1232 \\ + & 1 \end{array}$$

13	1x16
	1x16

$$\begin{array}{r} 5 \overline{) 18} \\ \underline{10} \\ 80 \end{array}$$

1	124
1	0x

$$\begin{array}{r} 1 \\ 0 \end{array} \left| \begin{array}{r} 0 \\ 1 \end{array} \right. \begin{array}{r} 0 \\ 1 \end{array}$$

35-41

2. $\textcircled{0011110111000000}$
3 $\text{E} = \text{F}$ 000000
 3E F 000000

4) a. 3F-400000

3 F 4
0011 1111 0100

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$$\frac{000 \dots 0}{w}$$

$$0(1111)_{two} = 0 \times 2^7 + 1 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 1 \times 2 + 0 \times 1 = 126$$

$$= -(+127) \text{ km}$$

$$3(-400000) = (-1) \times 1.100 \times 10^6 \times 2^{-1}$$

$$= 11 \times 2^{-2}$$

$$= 2 \times 2$$
$$= 0.75 \text{ ton}$$

Summary

CUE

b. BE000000

B	E	000000
1101	1110	000---0
1011		<u>24</u>

$$01111100_{\text{two}} = 0 \times 2^7 + 1 \times 2^6 + 1 \times 2^5 + 1 \times 2^4 + 1 \times 2^3 + 1 \times 2^2 + 0 \times 2 + 0 \times 1$$

$$= 124$$

$$= -3 + 127$$

$$\therefore \text{BE000000} = -1 \times 1.00 \dots_{\text{two}} \times 2^{-3}$$

$$= -1 \times 1 \times 2^{-3}$$

$$= -0.125_{\text{ten}}$$

5) Comets are awesome! 'o'

~~60m~~
~~436F~~

C o m e t s a r e a w e
43 6F 6D 65 74 73 61 72 65 61 77 65

S o m e ! 'o' null

73 6F 6D 65 21 00

~~436F 6D65 7473 2061 7265 2061~~

~~7765 736F 6D65 2100~~

\therefore 436F 6D65

7473 2061

7265 2061

7765 736F

6D65 2100

Summary