Homework #1 Computer Organization Due: February 1, 2008 (F)

1) Perform the following calculations:

(a)	(b)	(c)	(d)
10101011_2	1000101_2	$9CF23_{16}$	$9A4CF3_{16}$
$+\ \underline{101110_2}$	$-\ \underline{110011_2}$	$+\ \underline{82C3D_{16}}$	$-\ \underline{82A3D_{16}}$

2) Convert 437_{10} to hexadecimal (base 16).

3) Convert -437_{10} to two's complement number.

4) What decimal (base 10) value is represented by the 32-bit signed, two's complement value represented as a hexidecmal FFFF $FF8A_{16}$?

5) Use Booth's algorithm on 8-bit two's complement numbers to multiply $+10_{10}$ (as the multiplicand) by -37_{10} (as the multiplier) to calculate the product. Show your work as we did in class.

6) Convert -25.28125_{10} to its 32-bit IEEE-754 floating point representation.

7) Convert -25.28125_{10} to its 64-bit IEEE-754 floating point representation.

8) Suppose A, B and C are 32-bit IEEE 754 floating point variables with A having a normalized value of $1.11_2 \times 2^{75}$ and B having a normalized value of $1.101_2 \times 2^{30}$. After the assignment statement "C = A+B", why is C's value equal to A's value and not the sum?