

EE 3755, Fall 2010

Homework #1

Due Monday Sept. 20, 2010 in class.

Enjoy your HW

Alex

Please do the following problems:

① Perform the addition $X+Y$ where X and Y are the following 8-bit sign magnitude numbers:

$$X = (01011011)_2 = (+9)_{10}, \quad Y = (11101001)_2$$

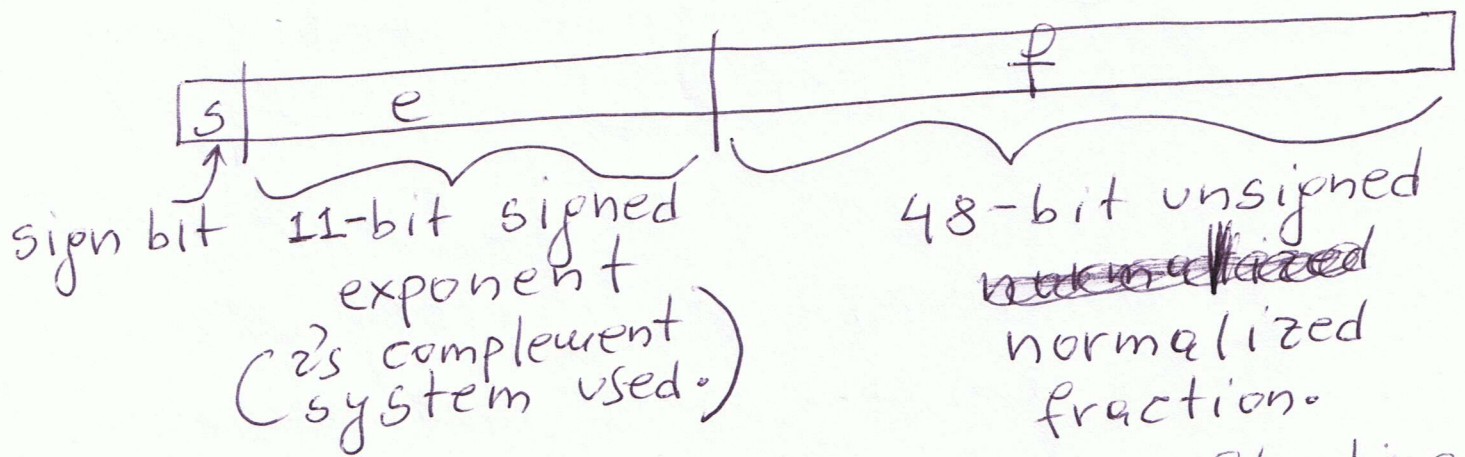
$$= (-105)_{10}$$

② Using the Booth algorithm that relies on examining three bits at a time, perform the signed multiplication with multiplier $= (-27)_{10}$, multiplicand $= (-18)_{10}$ and length $n=6$.

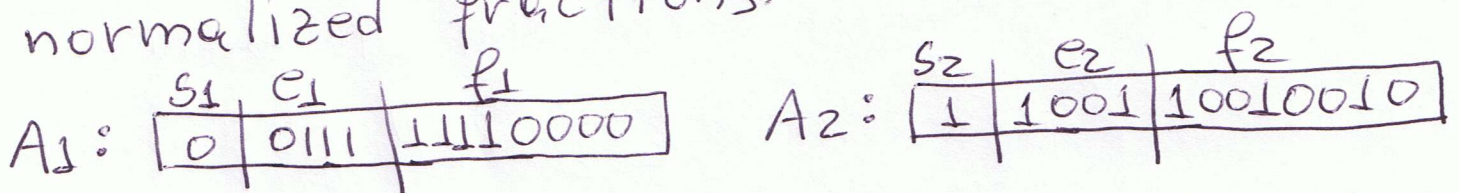
③ Using the shift-subtract/add division algorithm, perform the division of the 10-bit dividend $A = (0101010001)_2$ by the 5-bit divisor $B = (01101)_2$

④ Using the shift-subtract/add division algorithm, perform the division of the 10-bit dividend $A = (0101000011)_2$ by the 5-bit divisor $B = (01101)_2$

5 Compute the Dynamic Range for a floating point system based on the 60-bit binary FLP format shown below:



6 Consider the following two floating point numbers with 4-bit exponents in biased form and 8-bit unsigned normalized fractions.



Compute the summation $A_3 = A_1 + A_2$.

Return the result A_3 in a form consisting of a normalized fraction and exponent in biased form.