

CS430
Problem Set #4

Date assigned: 10/10/12
Date due: 10/17/12
Points: 50

Show all work when answering each question for full credit.

1) (5 pts) Research and find the number of processor cycles to perform an integer addition, multiplication, and subtraction. List the URL of where you found your answer.

2) (10 pts) Work problem a) and d) 10.11 on p 361. Express your result in both binary AND decimal. Further, for a) and d) show the value of CF and OF.

3) (10 pts) The "number of numbers" counts how many numbers (possible combinations) can be represented. For the IEEE 754 double-precision floating-point number, what is the "number of numbers" excluding infinity and NaN? Give your answer as a power of 2 formula and show how you arrived at your solution.

4) (10 pts) Assume a 16-bit representation of the IEEE 754 floating-point number exists with a sign bit, a 4-bit exponent, and an 11-bit mantissa (significand). Give a general formula for the largest and smallest negative value that can be represented using this format.

5) (15 pts) Express the number 0.2 as a 32-bit IEEE 754 floating-point number. Give your final result in HEX notation. Note: There are two possible answers to this question depending on the rounding method that is used. Give both answers that are possible and then write a simple C program that shows what the answer is on zeus using gcc. Paste in your C code and run results properly labeled after giving the two possible answers. Follow the C coding standards including documentation.

Note1: Please make sure your problem sets are typed, answered in order, and stapled together.

Note2: A hard copy of your Problem Set Solution is due on the instructor's desk by 11:45am on the day the assignment is due. Also, place a copy of this solution 03PUNetID.pdf in the CS430 Drop Box by 11:45am on the day in which the assignment is due.

Note3: I don't mind you talking about particular problems at a very high level (not a specific solution level) and even lending resources of where more information can be found. Further, all of your solutions are to be original and in your own words. If you have any questions, let me know.