ICS 233, Term 072

Computer Architecture & Assembly Language

Programming Assignment# 4
Due date: Wednesday, May 7, 2008

Q.1. It is required to write an assembly program that performs floating point operations on single precision floating point numbers following the IEEE 754 standard without using any of the floating point arithmetic instructions, rounding the result to the nearest even as follows:

(i) Write a procedure **fadd** that performs floating point addition of two single precision floating point numbers.

(ii) Write a procedure **fsub** that performs floating point subtraction of two single precision floating point numbers.

(iii) Write a procedure **fmul** that performs floating point multiplication of two single precision floating point numbers.

(iv) Write a procedure **fdiv** that performs floating point division of two single precision floating point numbers.

(v) Ask the user to enter two single precision floating point numbers and read them.

(vi) Perform the four arithmetic operations on the two entered numbers: addition, subtraction, multiplication and division, and print the results obtained by your implemented procedures and the results obtained using the existing floating point instructions.

Sample Execution of the Program:

```
Enter first floating point number: 5.67
Enter second floating point number: -2.3
Result of fadd = 3.3700001
Result of add.s = 3.3700001
Result of fsub = 7.9700003
Result of sub.s = 7.9700003
Result of fmul = -13.041
Result of mul.s = -13.041
Result of fdiv = -2.4652176
Result of div.s = -2.4652176

Enter first floating point number: 1.297e15
Enter second floating point number: 7.014e13
Result of fadd = 1.36714003E15
Result of add.s = 1.36714003E15
Result of fsub = 1.22685996E15
Result of sub.s = 1.22685996E15
Result of fmul = 9.097158E28
```

Result of mul.s = 9.097158E28
Result of fdiv = 18.491589
Result of div.s = 18.491589

This assignment is based on ***team work*** *with a maximum of* ***four*** *students in each team.* ***Each team should submit one solution****. The solution should be well organized and your program should be well documented. Submit a soft copy of your solution in a zip file. Your solution should be submitted in a* ***word file*** *that contains the following items:*

i) Your names and IDs

ii) Assignment number

iii) Problem statement

iv) Your solution along with the code

v) Discussion of what worked and what did not work in your program. Include snapshots that demonstrate the working parts of your program. If things did not work and you attempted to solve them, mention that and write about the difficulty that you have faced.