Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

School of Computer Science and Statistics
Trinity College Dublin
CS1022 / Introduction to Computing II

Lab #3 Part A
Hilary Term Week 9
Floating Point Numbers and Subroutines

1 Instructions (Thursday Groups)

Although this exercise will not contribute marks to your final result, you must still complete all steps below for your assigned mark for Part B to be counted.

Implement solutions to the exercises below and submit your .s files on Blackboard. When submitting, include the text "Initial Attempt" in the text area when uploading your solutions.

Share your solutions with the other members of your group.

Review the solutions of the other members of your group.

As a group, complete the Group Feedback Form assignment on Blackboard. You can do this by communicating with your group online, e.g. using Blackboard.

After completing the Group Feedback Form, revise and resubmit your own solutions on Blackboard. **When resubmitting your solutions on Blackboard, provide a short paragraph (max 100 words) describing the changes you made to your own solutions, after reviewing your peers' solutions and receiving their feedback on your solutions. If you didn't make any revisions to your original submission, explain why.**

2 Exercise

(i) Write an ARM Assembly Language subroutine which, given an IEEE-754 value in R0, returns the fraction, also in R0. The fraction should be returned as signed two's complement value.

Test your subroutine using multiple input values.

(ii) Write an ARM Assembly Language subroutine which, given an IEEE-754 value in R0, returns the exponent, also in R0. The exponent should be returned as a signed two's complement value.

Test your subroutine using multiple input values.

(iii) Write an ARM Assembly Language subroutine which, given a fraction in R0 and an exponent in R1, returns the IEEE-754 representation of the value. The fraction will be passed as two's complement value and will not necessarily be normalised. The exponent will also be passed as a two's complement value.

Test your subroutine using multiple input values.