RYERSON UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE

CPS310 – COMPUTER ORGANIZATION II

Lab #4

ARC Subroutines

Submission instruction:
Labs will be done individually. Please complete and submit this lab on D2L by the submission deadline according to the details provided by your TA. Each student should submit a pdf file that includes all their written work and screenshots of the results of the simulations. Please note that Lab 4 will be graded based on correct completion of the following questions in addition to the answer to TA's questions.

Notes:

- Make sure you store and restore the registers used by the subroutine.
- Pass all the parameters via stack data structure between caller and callee unless specified otherwise.

PART A – myFact

Write a program that calls a subroutine called ***myFact*** by passing a positive integer value via stack. The subroutine ***myFact*** calculates factorial of the positive integer value and returns the result in register **%r3**. Then the caller program stores the result in the memory location **4048**.

PART B – SQRT

Write a program that calls a function called ***SQRT*** by passing a positive integer value via stack. ***SQRT*** performs a square root of the positive integer number and returns the result in register **%r3**. Then caller program stores the result in the memory location **6048**.

Note: ***SQRT*** calculates the closest integer value the square root of the positive number. A few examples are provided below.

sqrt(13) returns 4
sqrt(12) returns 3
sqrt(10) returns 3
sqrt(9) returns 3
sqrt(8) returns 3

sqrt(5) returns 2
sqrt(4) returns 2
sqrt(3) returns 2