National University of Computer and Emerging Sciences

Lab Manual

Computer Organization and Assembly Language

Lab 05- Revised (Subroutines)

Instructor	Rida Mahmood
Class	DS3
Sections	A
Semester	Fall 2022

Fast School of Computing

FAST-NU, Lahore, Pakistan

Objectives

- Subroutines Saving and restoring registers
- Subroutines passing parameters through stack

Contents

<mark>Note for all questions</mark>: You can make as many memory variables, subroutines as you need. Must read all the manual before starting.

ACTIVITY 1:

Write a subroutine to determine p and m described as follows: If your roll number is 16L-4195 then $p = (4 + 1 + 9 + 5) \gg 2 = 4,$ and $m = p + 2 = 6.$

ACTIVITY 2:

Write a program that calculates the following series:

$$f = \sum_{i=1}^{m} p^i$$

Use p and m obtained from the subroutine of **Activity 1** and f **MUST** be stored in a 32bit number. For the calculation of this series, you are required to make multiple subroutines. Parameter passing from one subroutine to the other should be via stack. The final answer should be returned from stack as well.

ACTIVITY 3:

Write a subroutine to determine n and r described as follows: If your roll number is 16L-4195 then $n = max(4 + 1 + 9 + 5) = 9,$ and $r = n - 2 = 7.$

.

ACTIVITY 4:

Write a program capable of calculating nPr (for the n and r obtained from **Activity 3**):

$$n_{Pr} = \frac{n!}{(n-r)!}$$

Note: For the values of n and r from activity 3 you do not need to use any division command or subroutine.

REFERENCES

- "http://www.dosbox.com/download.php?main=1

- http://sourceforge.net/projects/nasm

- http://www.nasm.us/

- http://www.programmersheaven.com/download/21643/download.aspx (AFD)