National University of Computer and Emerging Sciences



Laboratory Manual

for

Computer Organization and Assembly Language Programming

(EL 213)

|  |  |
| --- | --- |
| Course Instructor | Dr. Asma Ahmed |
| Lab Instructor(s) | Ms. Hamna Waseem  Mr. Umar Bashir |
| Section | B |
| Semester | Fall 2020 |

Department of Computer Science

FAST-NU, Lahore, Pakistan

## Objectives

After performing this lab, students shall be able to:

* Subroutines
* Stack

**Exercise 1:** Write the sub-routine to calculate factorial of a number. Properly allocate space for local variables, parameters and return values. The sub-routine should take as Parameter the number to calculate the factorial and returns address of stored result through stack. Write a Multiplication subroutine instead of using MUL instruction. Test your subroutine on 8 factorial.

8! = 40,320= 9D80(16-bit Hex Value)

**Exercise 2:** Write a subroutine which will calculate the size of array.Write subroutines FindMin, FindMax, CalcSum and CalcAvg which will take address and size of array as parameter and returns the result through stack. Test your subroutine on arr= {19, 10, 8, 17, 9, 15,-1}.  
  
**Exercise 3:** In Exercise 2, artificially create functionality of **call** instruction by pushing return address into stack using .lst file.