National University of Computer and Emerging Sciences

Lab Manual

Computer Organization and Assembly Language



Lab 03

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| **Instructor** | Haiqa Saman  Raja Muzammil |
| **Class** | CS3 |
| **Sections** | 3E |
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Fast School of Computing

FAST-NU, Lahore, Pakistan

# Objectives

* How to interpret the different types of jumps
* How to use the different types of registers and how to manipulate them in assembly language
* How to perform arithmetic operations with registers and conditional jumps
* How to use the debugger for viewing the available registers and their function

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## ACTIVITY 1:

Give the value of the zero flag, the carry flag, the sign flag, and the overflow flag after each of the following instructions:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | ZF | CF | SF | OF |
| mov ax, 0x1254 |  |  |  |  |
| mov bx, 0x0FFF |  |  |  |  |
| add ax, 0xEDAB |  |  |  |  |
| add ax, bx |  |  |  |  |
| add bx, 0xF001 |  |  |  |  |

## ACTIVITY 2:

Write a program which calculates the square of a number in memory variable. Display the result in accumulator (AX).

## ACTIVITY 3

Write a program which finds the frequency of a specific number form the given array.

***array:*** *dw* ***1, 9, 9,9, 8, 8,8, 8, 8,8, 1, 1, 9, 9, 8, 8, 8, 8, 1, 9, 8, 8***

## ACTIVITY 4:

Write a program which finds the factorial of a given integer without the use of MUL command.

## ACTIVITY 5:

Write a program which determines smallest number from the given array.

***array:*** *dw* ***111, 999, 888, 888, 11, 99, 88, 88, 1, 9, 8, 8***

## 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)](http://www.programmersheaven.com/download/21643/download.aspx)