National University of Computer and Emerging Sciences



Laboratory Manual

for

Computer Organization and Assembly Language Programming

(EL 213)

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| Section | B |
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## Objectives

After performing this lab, students shall be able to:

* Learn conditional and unconditional jumps.
* Be able to take decisions on what conditions suits where in code.
* Translate high language programs to assembly language.

**Exercise 1:** Write an assembly program that which finds if an array 'digits' is palindrome or not. The array ends on a -1. If the number in the array is palindrome, set bx to 1 and 0 otherwise.

**Palindrome**: A palindrome is a word, number, phrase, or other sequence of characters which reads the same backward as forward, such as madam or racecar or the number 10201.

**For example:**

|  |  |
| --- | --- |
| If  digits: 1,1,2,1,1, -1  set bx=1 | If  digits: 1,2,2,2,-1  set bx=0 |

**Exercise 2:** Write an assembly language code that computes product of ‘num1’ and ‘num2’ and saves it in ‘product’. Num1, num2 and product are memory variables of word length. For any number two numbers n and m, your program should add n, m times to produce the product. Note how 4\*5 = 4+4+4+4+4.

**For Example:**

Num1=6

Num2=5

product= 0x1E

**Exercise 3:** Write an assembly program that finds the union of 2 sorted arrays and store the result in another array. You can create size variables for all the arrays.

**For Example:**

Arr1: 1, 2, 3, 4, 6, 8, 10

Arr2: 3, 4, 6, 9, 10, 11

Union: 1, 2, 3, 4, 6, 8, 9, 10, 11

**Exercise 4:** Write an assembly program that checks whether a number BX in binary form has two adjacent 1’s or not.

If a number in binary form does not have any adjacent 1’s, then set AX=1 else set Ax=0.

**For example:**

If Bx has **1010100001010000b**, then set AX=1. However, if BX has **000110101010010b** then set Ax=0.