National University of Computer and Emerging Sciences

Lab Manual

Computer Organization and Assembly Language

Lab 04

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Class	CS3
Sections	D
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Note for all questions: You can make as many memory variables as you need

ACTIVITY 1:

Initialize AX with last 4 digits of your roll number (for example, if your roll number is 16L-1105 then AX should be initialized with 1105).
Once initialized, write a program to swap every pair of bits in the AX register as shown in **Table** below:

AX	Contents of AX (Your Roll #)			
Before	0000	0100	0101	0001
After	0000	1000	1010	0010

ACTIVITY 2:

Modify your program in Activity 1 to swap two bits as shown in **Table** below:

AX	Contents of AX (Your Roll #)			
Before	0000	0100	0101	0001
After	0000	0001	0101	0100

ACTIVITY 3

Modify your program in Activity 1 & 2 to swap two nibbles as shown in **Table** below:

AX	Contents of AX (Your Roll #)			
Before	0000	0100	0101	0001
After	0100	0000	0001	0101

ACTIVITY 4:

Initialize AX with last 4 digits of your roll number (for example, if your roll number is 16L-1105 then AX should be initialized with 1105). Store $\overline{AX}$ in BX. Make a 32-bit memory variable f, initialize it with 0 and compute

$$f = (A \times B) + \{A, B\}$$

$\times$ is **Multiplication** operation, $+$ is **Addition** operation whereas $\{A, B\}$ **concatenates** 16-bit **A** and **B** to form a 32-bit number.