National University of Computer and Emerging Sciences



**Laboratory Manual**

*for*

**Computer Organization and Assembly Language Programming**

**(EL 213)**

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**Objectives**

After performing this lab, students shall be able to perform:

* Applications of Software Interrupts.
* Interrupt hooking

**Exercise 1:** Your task is to get two keystrokes using keyboard interrupt number 0x16 one after the other. On the first keystroke, regardless of which key is pressed, you should clear the screen. The following should be done on second keystroke:

* If you press ‘a’, your program should display “Hi, You pressed a”.
* If you press ‘b’, your program should display “Hi, You pressed b”.
* For any other case your program should display “Hi, You entered wrong credentials”.
* After two keystrokes, your program should terminate.

**Exercise 2:** Write a function to find the greatest common divisor of two integers M and N, according to the following algorithm:

1. DIVIDE M by N, getting quotient Q and remainder R
2. If R=0, stop. N is the GCD of M and N
3. If R≠0, replace M by N, N by R, and repeat step 1.

The function would take M through AX, and N through BX. and return the GCD in AX. The function is hooked at interrupt 80h.

**Exercise 3:** INT 0 returns to the line that caused the interrupt and hence goes into an infinite loop. Modify INT 0, so that:

1. It clears register ax and dx.
2. The issue of infinite loop is somehow solved (HINT: the problem occurs while doing **IRET**).