National University of Computer and Emerging Sciences

Laboratory Manual

for

Computer Organization and Assembly Language Programming

(EL 213)

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Section	H
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Objectives

After performing this lab, students shall be able to:

- ✓ Display Memory
- ✓ Hooking
- ✓ Interrupts

Exercise 1: Write a program that prints and prints the following messages: one message per keypress.
'msg1: Hi! I am YourName.'
'msg2: I am YourMode(Happy, Sad, etc).'
'msg3: I Study at FAST.'
'msg4: My Roll No is YourRoll#.'

Exercise 2: Write an assembly program to draw a 4x4 rectangle (4 rows and 4 columns) on the display memory. Allow the user to move a cursor within the rectangle using arrow keys. Utilize interrupt 16h, service 0 to detect arrow key presses. The program should update the cursor position on the screen after each movement and prevent the cursor from moving outside the rectangle.

Exercise 3: Write an ISR and hook it with INT 21h. Your custom ISR should use the service provided by the following function INT 21h and display the date in different formats.
       AH = 2Ah
Return: CX = year (1980-2099)
       DH = month
       DL = day

DD/ MM/YYYY, e.g. 07/05/2015
DD MM, YYYY e.g. 07 May 2015
 Day D# MM, YYYY e.g. Thu 07 May 2015
Use Service 0x2A of int 0x21 to get the system date.

Exercise 4: Write an assembly program that hooks into interrupt 9h (keyboard interrupt) to detect the press and release events of a specific key (choose any key). Display "A key is pressed" when the chosen key is pressed and "A key is released" when the key is released. Ensure that the program accurately captures the events for the specified key, utilizing interrupt 9h for keyboard interaction.

Exercise 5: Write a TSR to clear the screen when CTRL key is pressed and restore it when it is released.