BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
II SEMESTER 2019-2020
EEE/CS/INSTR F241 MICROPROCESSOR PROGRAMMING AND INTERFACING
Lab #5 (OPEN BOOK)

Interrupts: **1. Software** 2. Hardware

Useful subroutines within **DOS** are available through the INT (interrupt) instruction. The INT instruction is like a FAR call. It saves CS:IP and flags on the stack and executes the subroutine with it. INT executes a software interrupt.

In the next two experiments you will be using **INT 21 H** (DOS Interrupts) to input information from the **keyboard** and **display** it on the screen.

INT 21H: Useful DOS interrupt to input information from the keyboard and display it on the screen

Practice :
Using Software Interrupt: INT 21 with different parameter
1. Input a character from keyboard with Echo
2. Input a character from keyboard without Echo
3. Input a string from keyboard
4. Output a character to display
5. Output a string on display

1. Code snippet : Input a character from keyboard withEcho
Note: You can use debugx only

```
        MOV AH, 01h             ; AH -01 parameter for INT 21h
        INT 21h
```

2. Code snippet : Input a character from keyboard without Echo
Note: You can use debugx only

```
        MOV   AH, 08h           ; AH -08 parameter for INT 21h
        INT   21h
```

3. ALP : To input a string from keyboard (STDIN)
Result: Check memory location to confirm what ever you have entered

```
.data
max1    db 32           ; 32 is max no. of chars that a user can type in (max possible – 255)
act1    db ?            ; actual count of keys that user types will be stored here after int has
                        ; executed (Note this cannot exceed the value specified in max1 –
                        ; actual keys you enter will 31 as the 32nd will be Enter key)
inp1    db 32 dup(0)    ; Reserve 32 locations for input string
.code
.startup
        LEA DX,max1
        MOV AH, 0Ah
        INT21h
.exit
end
```

4. Output a character to display
Note: Write ALP

```
MOV DL, 'A'
MOV AH, 02h
INT 21h          ;After Interrupt is executed character 'A' will be displayed on the
                  screen.
```

5. Output a string on display (STDOUT)
Note: Write ALP

```
.data
        str1    db 'HELLO $'        ; all strings must terminate with '$' ASCII value (24h)
.code
.startup
        lea dx, str1
        mov     ah, 09h
        int     21h
```

When interrupt is executed the string "HELLO" will be displayed on screen. Remove the '$' sign. What happens?

Task1:
Write an ALP that does the following
1. Display the string "Enter User Name" and goes to the next line
2. Takes in the user entered string compares with user name value already stored in memory
3. If there is no match it should exit.
4. If there is a match it should display the string "Enter Password" and goes to next line
5. Takes in password entered by the user and compares with password already stored in memory
6. If there is no match it should exit'
7. If there is a match it should display "Hello Username"