

National University of Computer and Emerging Sciences, Lahore Campus



Course Name: Computer Organization and Assembly Language
Program: BS(Computer Science)
Duration: 60 Minutes
Paper Date: 14th April, 2018
Section: ALL
Exam Type: Mid-2

Course Code: EE213
Semester: Spring 2018
Total Marks: 35
Weight: 15%
Page(s): 3

Student : Name: _____ **Roll No.** _____ **Section:** _____

Instruction/Notes:

1. Exam is Open book, Open notes.
2. Properly comment your code.
3. You **CANNOT** use an instruction **NOT** taught in class.
4. Write your answer in the space provided. You **can take extra sheets BUT they WONT BE ATTACHED WITH THE QUESTION PAPER OR MARKED.**
5. No need to copy code from book. If you need any code/part of code, just mention the line numbers and page no.

Q1. Write code to clear IF (i.e. IF=0) without using cli instruction. (10 Marks)

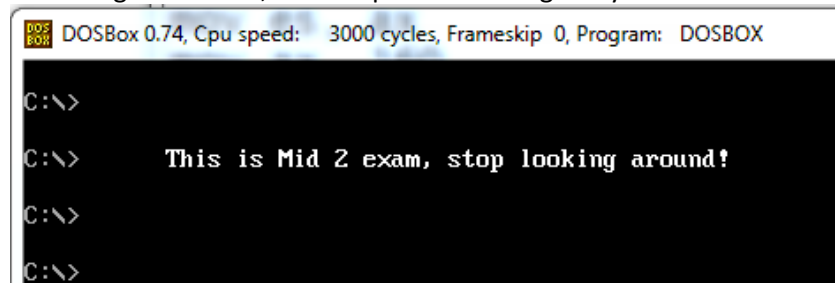
Q2. Write a SubStr function that extracts a substring from video memory and places it in DS. The subroutine is passed the following parameters: The row number of video screen where string is placed, the column number, the length of string, the starting position (i.e. character no.) of substring on video screen, length of substring and address of substring array in DS. **You have to do this using String Instructions ONLY. No credit for doing it without string instructions. Stack is also made for your ease. Order of parameters should remain the same. (15 Marks)**

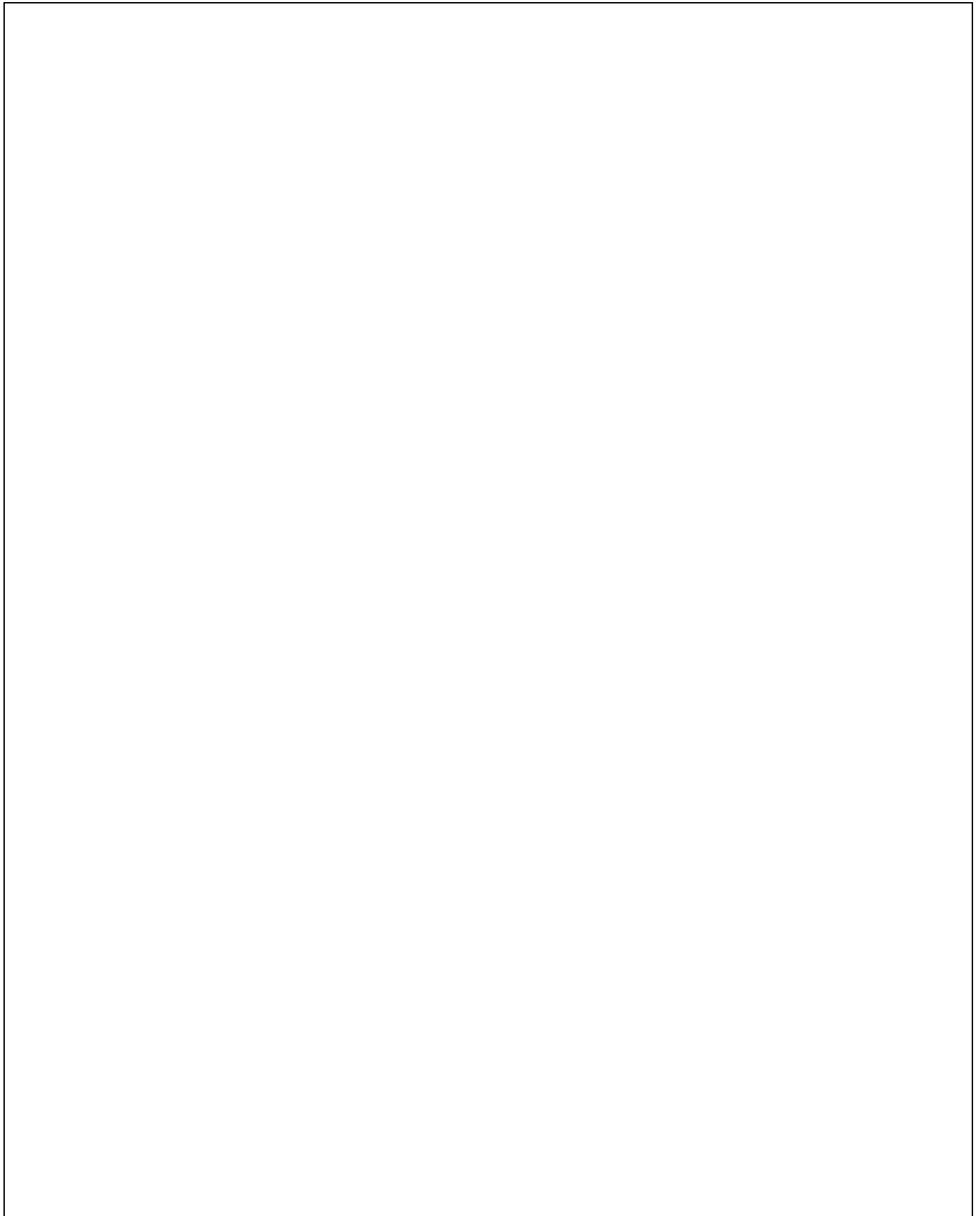
Return Value
Address of string in DS
Length of Substring
Starting position i.e. char of string on video memory
Length of string printed on video memory
Column no.
Row no.

← SP

Example:

For row no. 3, column no. 10 (both row & column starts from zero), length of string 40, starting position 9, and length of substring 10, the sub string "id 2 exam," will be placed in string array in DS.





Q3. Write a software interrupt service for int 0x58 that receives three arguments via registers: a number k in ax register, a segment value in dx register, and an offset value in bx register. The service replaces the offset and segment values for interrupt number k in the IVT with the ones passed in bx and dx registers respectively. Basically int 0x58 will be used to 'hook' the kth interrupt. Note: the service maybe used to hook a software or hardware interrupt. **(5 Marks)**

Here is an example of how int 0x58 may be used:

```
mov bx, myISRX ;offset of the ISR
mov dx, CS      ;segment of the ISR
mov ax, 0x31    ;hook int 0x31
int 0x58
```

Q4. Dry run the following code and write in one line precisely what the code is doing? **(5 Marks)**

```
mov ax, 0xb800
mov es, ax
mov di, 2560
sub di, 2
mov ax, 0x0720
mov cx, 480
std
rep stosw
```

☺ GOOD LUCK! ☺