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CS401 Computer Architecture and Assembly Language Programming

Final Term Examination – Spring 2005

Time Allowed: 150 Minutes

Instructions

Please read the following instructions carefully before attempting any question:

1. **The duration of this examination is 150 minutes.**
2. **This examination is open Handouts.**
3. **Answer all questions.**
   a. **There is no choice.**
   b. **You will have to answer correctly all questions in this examination to get the maximum possible marks.**
4. **Do not ask any questions about the contents of this examination from anyone.**
   a. **If you think that there is something wrong with any of the questions, attempt it to the best of your understanding.**
   b. **If you believe that some essential piece of information is missing, make an appropriate assumption and use it to solve the problem.**
5. **You have been provided with all assembly tools so you can use assembly tools also.**
6. **Your paper contains 4 questions.**

All Coding questions should be answered using the Assembly language syntax.

Best of Luck

Total Marks: 50 **Total Questions: 04**

Question No. 1 **Marks : 10**

Answer the following regarding protected mode descriptors:

Write the values of limit A bit , P bit and AVL bit of the following descriptors.

1. **dd 0x 00FEADEF , 0x 00B60718**
2. **dd 0x F8E2135A , 0 x 13DC1258**

Question No. 2 — Marks : 10

Give the short answer of the following:

1. **Why we need to disable the interrupts while calling interrupt INT 80hj.**
2. **Why we need to disable interrupts before we attempt to change the stack (i.e. ss and sp).**

Question No. 3 — Marks : 10

I. Consider the following code:

What would be in the variable **Find** after the execution of the code given below?

```
;;-----------------------------------------------------------------------------------------------------------------------------------
----
[org 0x0100]
              mov  cx, [num1]
              mov  ax, 0

l1:           add  ax, cx
              sub  cx, 1
              jnz  l1

              mov  [Find], ax
              mov  ax, 0x4c00
              int  0x21

num1:         dw   15
Find:         dw   0

;;-----------------------------------------------------------------------------------------------------------------------------------
-----------------------------------------------
```

II. Consider the following code:

What will be the values in **num1** and **num2** after the execution of the code given below?

```
;;-----------------------------------------------------------------------------------------------------------------------------------
-----------------------------------------------
 [org 0x0100]
              mov  ax, [num1]
              mov  bx, [num2]
              add  ax, bx
```

```
                sub  bx, ax
                add  ax, bx



                mov  ax, 0x4c00
                int  0x21

num1:           dw   5
num2:           dw   10
```

;;----------

Question No. 4 Marks : 20

Write a function "ShowResult" that takes the address of two memory locations via the stack, the one pushed first is the address of an array of integers and the second is the length of that array. The function should print "**Yes**" if the array is in ascending order and "**No**" if it is not.

Some sample output is shown below,

If array is:	**Output**
5 7 9 13	Yes
15 7 19 13	No