National University of Computer and Emerging Sciences, Lahore Campus



Course:

Section:

Exam:

COAL BSCS,BSDS,BSR Course Code: Semester:

EE2003 Fall 2023

Program: **Duration:** Paper Date:

1 Hour 08-Nov-2023

Midterm - II

All

Total Marks: Page(s):

30 5 Roll No.

Instruction/Notes:

This is an open notes/book exam. Sharing notes and calculators is NOT ALLOWED. All the answers should be written in provided space on this paper. Rough sheets can be used but will not be collected and checked. In case of any ambiguity, make reasonable assumptions. Questions during exams are not allowed.

Question 1 [CLO 2] [15 marks]: Answer the following short questions.

[3 marks] What will be printed on display memory after the execution of following piece of code? Also tell the (i) color of the printed character.

[org 0x0100] mov ax, 0xb800 mov es, ax; point es to video base mov byte[es:0], 0x31 mov byte[es:1], 01 mov ax, 0x4c00 int 0x21

Character:

Color: 01

Oxol which is for blue text on black back

[2 marks]: Will this code properly clear the stack? Answer in only Yes/No. (ii)

[org 0x100] Mov ax,0x100 push ax Call Done Mov ax, 0x4c00 int 0x21 Done: Add sp,1 Ret 1

Show your working here: an , 0x100

ax Address

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(111) [5 marks]: The following subroutine max takes 3 numbers as parameters and returns the largest number through stack. [org 0x100] start: jmp start sub sp,2 max: push 8 push bp push 5 mov bp, sp push 6 sub sp,2 call max ' push ax pop dx push cx mov ax, 0x4C00 mov ax, [bp+4] int 21h cmp ax, [bp+6] ja next mov ax, [bp+6] next:mov [bp-2],ax mov cx, [bp+8] cmp cx, [bp-2] ja next1 mov cx,[bp-2] next1: mov [bp+8],cx рор сх pop ax mov sp, bp pop bp ret 6 Show your working here: Local space Assuming that the initial value of sp is OxFFFE, answer the following questions. (a) What is the value of sp_after 1. call max instruction is executed? OXFFF4[1] 2. ret 6 instruction is executed: OxFFFC[1] (b) What is the value of bp after mov bp, sp instruction is executed? Ox FFF[1] (c) It is noticed that after the execution of the subroutine max, correct return value is not popped in dx register. Identify and **FAST School of Computing**

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