National University of Computer and Emerging Sciences, Lahore Campus

	Course Name:	COAL Lab	Course Code:	EL-2003
	Program:	BSCS BSDS	Semester:	Fall 2021
	Duration:	2 hr + 10 minutes(Submission)	Total Marks:	40
	Paper Date:	25-January-2022	Weight	40
	Section:	All Sections	Page(s):	2
	Exam Type:	Lab Final		

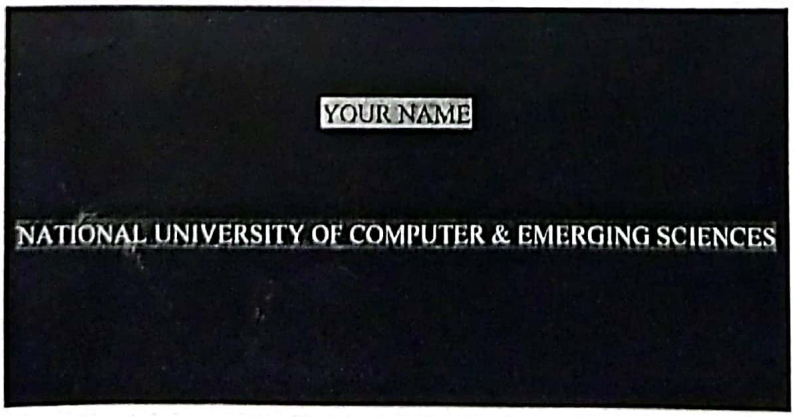
Student : Name:_____ Roll No._____ Section:_____

Instruction/Notes: READ ALL INSTRUCTIONS CAREFULLY.

1. Understanding the question paper is also part of the exam, so do not ask any clarification. Make suitable ASSUMPTIONS.
2. Final Submissions should be done in your respective section folder on \\cactus\Xeon\Fall 2021\COAL\Final Submission. Each question related files must be in separate folder (Question 1, Question 2) and all the separate folders must be in a single zip file. **Zip file must be renamed after your roll number e.g., "18L-4125". Multiple submissions are not allowed (if done, only first one will be considered). (2 marks)**
3. Any kind of cheat sheet/code other than the softcopy of your book if found with you in your PC will result in immediate disqualification from Final Exam and 'F' as final grade in COAL Lab. So make sure you delete everything from Desktop. Also delete all the files permanently from Recycle Bin and Trash respectively for Windows/Ubuntu. Delete all files from your Drives before starting the exam.
4. You are immediately disqualified from the exam if:
   i. You are seen talking, whispering, borrowing or looking at someone's PC
   ii. A USB is found attached to your PC
   iii. You are seen using cell phone/smart watch.
   iv. You are caught accessing internet

****Submission: You have to submit your (Roll-No.asm) file in a folder named as Question 1. You should provide screenshots of your working code along with the asm file****

You are to make a screen saver that appears if there is no activity for 10 seconds. Write a program "tsr.com" that saves the old screen in a buffer (using MOVS instruction), Displays the screensaver and then restores the old screen saved in the buffer when any key is pressed. The screensaver is shown below. Properly make three separate functions. For this question, you are provided with a helper code **'timer.asm'** that will help you count 10 seconds. Build your code around that routine. **[Marks 20]**



Name should be highlighted in Light Green with the text color Red.
University name should be highlighted in Green with White as Text Color
Make comments in code to get maximum credit.

****Submission: You have to submit your (Roll-No.asm) file in a folder named as Question 2. You should provide screenshots of your working code along with the asm file****

Write an assembly program that takes a 16 bit number as input from user and calculates whether the number is a **Weird Number** or not. If the sum of the proper divisors (divisors including 1 but not itself) of the number is greater than the number then the number is "WEIRD NUMBER". If the sum is not greater than the number the number is "NOT A WEIRD NUMBER"

Use int 16h to take input from user and ah=0x13 service of int 10h (BIOS service) to print string on the screen. **[Marks 20]**

Example # 1:	**Example # 2:**
Num=40 **Output**: NOT A WEIRD NUMBER **Explanation:** 1+4+5+10+20=40	**Num**=70 **Output**: WEIRD NUMBER **Explanation:** 1+2+5+7+10+14+35=74

Make comments in code to get maximum credit.