National University of Computer & Emerging Sciences, Karachi
Fall-2020 (CS-Department)
Mid-term Lab Exam (A)

Course Code: EL229	**Course Name:** Computer Organization & Assembly Lang. Lab
Instructor Name: Amin Sadiq	
Student ID:	**Section:**
Date: November 05, 2020	**Time:** 120 minutes (1:15PM - 3:15PM)

Instructions:

- Attempt all tasks. All tasks carry different points **Max Points**: 20
- Return the paper after exam
- **Cheating in any case will lead to F-GRADE directly as per university rules.**
- In case of any ambiguity, you may make assumption. But your assumption should not contradict any statement in the question paper

Task 1: (4)

a) Write a program that uses a loop for the first 25 numbers of this sequence.

2, 7, 12, 17, 22, 27.....

b) Declare a WORD array of size 10 having different values of your own choice. Write a program to calculate sum of cube of all elements of that array and store it in the variable having size of 32 bit.

Task 2 (5)

Using a nested loop create a program for the given output which is attached below.

```
1  2  3  4  5  6  7  8  9  10
2  4  6  8  10  12  14  16  18  20
3  6  9  12  15  18  21  24  27  30
4  8  12  16  20  24  28  32  36  40
5  10  15  20  25  30  35  40  45  50
```

Create an array of your full name and data type of this array should be of 4 bytes. Use of length and sizeof are mandatory.

Task 3: (3)

Consider the following data declarations of array:

```
.data
myArray    DW  400h,600h,10h,702h
```

For base Address you have to find out by implementing it then what are contents (Value) and address of the Following symbol in the below table:

Symbols	Address	Value
[myArray+0]		
myArray[(esi*4)-4+2] ; esi=1		
[myArray+7]		
[myArray+edi-0]+2 ; edi=3		
myArray+12		

Task 4: (3)

Use following array declarations:

arrayD DD 362,210,900,101,450
arrayB DB 10,64,76,09,100

Using Scale factor method implement a program which add odd index of arrayD with even index of arrayB and storage that value in the array of 16-bit of your own name.

Task 5: (2)

Give the content of the destination register after the execution of each of the following instructions. If there is any syntax error in the instructions then correct it, when the instructions are:

1. MOV Var2, 7F035816h
   MOV bh, BYTE PTR Var2+1
   MOV ax, WORD PTR Var2
   MOV cl, BYTE PTR Var2+2

   AX=_____ AL=_____ AH=_____
   CX=_____ CL=_____ CH=_____
   DX=_____ DL=_____ DH=_____

2. MOV Var2,103A8B91h
   MOV dl, BYTE PTR Var2+3
   MOV eax, DWORD PTR Var2
   MOV cx, BYTE PTR Var2+3

   AX=_____ AL=_____ AH=_____
   CX=_____ CL=_____ CH=_____
   DX=_____ DL=_____ DH=_____

Task 6: (3)

You are appointed as a teaching assistant in the renowned university. A student of you come to resolve his query and your student is facing some problem in solving the Armstrong of the given number i.e. 1648. He wants you not to use mul instruction for this program as it was mention as a restriction in the task so rather than you can use addition and subtraction for this program. It was also mentioned that this number 1648 is broken down into four variables like var1=1, var2=6 and var3=4 and var4=8.