2021-0648 Kashif Ali

National University of Computer and Emerging Sciences, Karachi
Fall – 2021, FAST School of Computing
Midterm Examination
04th November 2021, 1:15pm – 03:00pm

Course Code: EL2003	**Course Name: Comp. Organization & Assembly Language Lab**
Instructor Name: Kariz Kamal	
Student ID:	**Section:**
Total Time: 105 Minutes	**Total Points: 20 points**

Instructions:

- Return the question paper along with your **roll number written on it.**
- Read each question completely before answering it. **There are 6 questions on 2 pages.**
- Attempt all the given questions. **All questions are carrying equal points.**
- **Cheating in any case will lead to F-GRADE as per university rule.**
- In case of any ambiguity, you may make assumption. But your assumption should not contradict any statement in the question paper.

Question # 1 **[3 Points]**

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 2-byte array of size 20 having different values of your own choice. Write a program to calculate sum of square of all elements of that array and store it in the variable having size of 32 bit.

Question # 2 **[3 Points]**

Use following array declarations:

```
arrayW DW 50,20,90,101,450
arrayB DB 10,24,67,90,100
```

Add even index of arrayW with odd index of arrayB and storage that value in the array of 32-bit of your own name. Use of Scale Factor is mandatory

Question # 3 **[3 Points]**

a) Write a program to generate the tables of last 2-digits of your roll#. The last two digit should be entered by the user on the console and show the result on the console as well.

b) Consider the roll no 16k-3879. Make an array in which you have to find the sum of the digits of your roll number. You will declare the array just once above and then find the sum of your roll number.

ASCII code of k is 75d and – code is 45d in decimals.

Question # 4 **[5 Points]**

Use following array declarations:

```
Array1 byte 11, 22, 33
Array2 word 111, 222, 333
Array3 byte 0Eh, 1Fh, 22h
```

Perform addition and multiplication of arrays using indirect operands. Format the output by displaying all the values by using WriteInt, WriteString & crlf procedures. Implement the parts given below:

a) Create User Define procedure and name it as AddArray then first increment each value of array then perform addition in between the similar indexes of each array elements. Like result1=Array1[0] + Array2 [0] + Array3[0] & so on.

b) Create User Define procedure and name it as MulArray then First decrement each value of array then perform multiplication in between the similar indexes of each array elements. Like res1=Array1[0] *Array2[0] *Array3[0] & so on. You have to use another method to multiply instead of MUL Instruction

Question # 5 **[3.5 Points]**

Write a program using nested loops to print 4 numbers in a line, starting from 1 and print n lines. Accept number of lines n from the user.

Sample output:

```
Input number of lines: 4
1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
```

Question # 6 **[2.5 Points]**

Using only MOV, ADD, SUB, INC, DEC to translate the following high-level language assignment statements into assembly language. A as byte, B as Word, and Z as byte are byte variables.

- A= B-Z
- A= -(A+ 3)
- A=B-A+1
- Z=A-B+5

P.S: Note you have to take values of your own choice

"If there is something, you don't know today. You will surely learn afterwards. Life is not an exam hall."

BEST OF LUCK ☺