National University of Computer and Emerging Sciences

COAL Lab Midterm

Computer Organization and Assembly Language

| **Time Allowed** | 90 Minutes | **Student Name** | |  |
| --- | --- | --- | --- | --- |
| **Maximum Marks** | 100 | **Roll Number** | |  |
| **Lab Instructors** | Hazoor/Rida | | **Date** | 24th Oct 2022 |

**Before you start make sure:**

1. **Fill word Format on GCR & submit PDF [Only PDF formats accepted]**
2. **PLAGIARISM WILL BE MARKED ZERO WITH NO RETAKE**

# **Activity 1: [40 Marks]**

You are given two arrays, array1 and array2 along with their sizes, size1 and size2, respectively. Both arrays are sorted already, but array1 is sorted ascending order while array2 is sorted in descending order. You have to merge the two arrays in place, so that the resulting array looks sorted in descending order and contains elements from array1 and array2.

For this activity:

* You cannot use any sorting algorithm.
* You cannot use the stack for sorting/merging.
* You cannot use any extra memory location/variable.
* Use registers only.

**Sample input/output:**

| State of data variables before running the code: | State of data variables after running the code: |
| --- | --- |
| array1: db 1,2,3,4,5,6,7  array2: db 9,6,4,1  size1: db 7  size2: db 4 | array1: db 9,7,6,6,5,4,4  array2: db 3,2,1,1  size1: db 7  size2: db 4 |

# **Activity 2: [40 Marks]**

Write a subroutine **CharacterTriangle** that receives 8 parameters: (X1,Y1), (X2,Y2), (X3,Y3) as Vertices of Triangle, C as color, K as character such as ‘+’, ‘\*’, etc. The **CharacterTriangle** prints a character triangle of the specified color, position.

# **Activity 3: [20 Marks]**

Use your subroutine from Activity2 and print 3 different triangles for various shape, color and character.