CSE 115 – Programming Language I
Fall 2020
Mid Term 2, Mark – 35, Section 7

Question 1 has 10 points. All other questions have 5 points each. You must have to answer question 1 and then any 5 out of remaining 6 questions.

1. You must implement "Structure" to solve this problem: Enter the marks of a number of students in Chemistry, Mathematics and Physics (each out of 100) until id is given zero. Use a structure named "Students_Marks" having these elements: id_no, full_name, chem_marks, maths_marks and phy_marks. Then you need to find the average and highest marks in each subject and output result sheet of each student into a text file called student_result.txt according to the following format:

   Id: 101
   Name: Rahim Uddin

Subject	Marks Obtained	Highest Mark	Average Mark
Chemistry	75	85	65
Math	85	90	70
Physics	90	90	75

   Id: 130
   Name: Karim Uddin

Subject	Marks Obtained	Highest Mark	Average Mark
Chemistry	85	85	65
Math	68	90	70
Physics	78	90	75

   ….

2. Based on your generated file in the above scenario, write a C program to count the total number of characters, words, and lines read from the generated student_resut.txt file.

3. Write a C recursive function void my_strrev (char *str) to print the string in reverse order.
   Sample Input: Hello dear
   Sample output: raed olleH

4. Write a function that can recursively print the odd numbers from the array taken from user input.
   Sample input: 25 30 45 21 36 72 91
   Sample output: 25, 45, 21, 91

5. Write a C program to swap the elements of two arrays using pointers. You could use the following methods to implement your code if you wish, however you can also bring your own algorithm.
   (1) **void takeInputArray(int *arr, int size);**   //...Function used to read input from the user in an array. *arr= Pointer to array to store input size = Size of the array
   (2) **void printTheArray(int *arr, int size);**   //... Function used to print the elements of an array. *arr = Pointer to array, which is to print. *size = Size of the array
   (3) **void swapArrays(int *sourceArr, int *destArr, int size);** //...Function to swap elements of two arrays. *@sourceArr = Pointer to source array to swap. *destArr = Pointer to destination array to swap. size = Size of the array.

   Sample Input/Output:
   Enter size of array: 5
   Enter 10 elements in source array: 1 2 3 4 5
   Enter 5 elements in destination array: 10 20 30 40 50
   Source array before swapping: 1, 2, 3, 4, 5
   Destination array before swapping: 10, 20, 30, 40, 50
   Source array after swapping: 10, 20, 30, 40, 50
   Destination array after swapping: 1, 2, 3, 4, 5

6. Write a C program to find both of the second largest and smallest elements from a given array.

7. What will be the output of the following recursive function if you call that function initially as fun (3)? Show steps to find your answer.

```
void fun (int n) {
        if (n <= 0)
                return ;
        printf ("%d, ", n--) ;
        fun (n--)
        printf ("%d, ", n--)
}
```