Code: CSC27

MCA (II - SEM) EXAMINATIONS, 2021

Lab-IV (ADS + SP)

Date: Friday July 06, 2021 **Max. Marks:** 20 **Time:** 10:00 AM – 12:00 Noon

Instructions:

(i) Write your Roll Number, Name at the top of the program as comment.
(ii) Attempt **any TWO** questions. All question carry equal marks.
(iii) Write the program in C/ C++ and send me source file. If you do not have Computer System, then you write it in your hand writing on paper and send it.
(iv) Send your program through mail to **jahir.jmi@gmail.com**.
(v) The program sends after the 12:05 PM will be not accepted.
(vi) If you have written the programs on computer/ Laptop, then you may demonstrate it.
(vii) The students are advised to not share their program with other student. In case they have shared it, marks will be deducted.

Q 1. Let array *a[0..n-1]* stores a list of n integers without duplicate value. Write an efficient C/C++ function *void partitionBubbleSort(int a[], int n)* (using in-place bubble sort) that partition the given list into two sub lists *a[0..floor(n/2)-1]* and *a[floor(n/2).. n-1]* such that elements of the first sub list must be less than elements of the second sub list and first sub list is sorted in decreasing order whereas second sub list is sorted in increasing order. For example this algorithm sort the list 8, 1, 7, 6, 2, 5, 3, 4 into 4, 3, 2, 1 5, 6, 7, 8; where the it sort the list 8, 1, 7, 6, 2, 5, 3, 4, 9 into 4, 3, 2, 1, 5, 6, 7, 8, 9. Thereafter illustrate this function in main() function by reading n unique random numbers and then sorting them.

Q 2. Write an efficient non-recursive C/C++ function *int binarySearchInPartitionedSortedList(int a[],int n, int x)* that search the x in portioned sorted list using modified binary search algorithm. Where a[0..n-1] stores two sub lists *a[0..floor(n/2)-1]* and *a[floor(n/2).. n-1]* such that elements of the first sub list is less than elements of the second sub list and first sub list is sorted in decreasing order whereas second sub list is sorted in increasing order. Thereafter in main() function illustrate it by reading such list of n elements and show the searching results along with intermediate results in search operation for searching all exiting elements and two non-existing elements one that is less than all elements of the list and other that is greater than all elements of the list.

Q 3. Write a shell program that read path of a directory and then make "JMI_Dir", "JMI_Txt", and "JMI_Others" directories in this directory and copy all directories along with its contents into "JMI_Dir" directory; copy all text files including C/C++ files whose size are greater than 1000 bytes into "JMI_Txt" directory; and copy all other files whose sizes are greater than 1500 bytes into "JMI_Others" directory.