

National Institute of Technology Calicut

Department of Computer Science and Engineering

B. Tech. (CSE) – Third Semester

CS2092D: Programming Laboratory

Assignment-1-Part-B

General Instructions:

- Programs should be written in C language and compiled using C compiler in Linux platform.
- Invalid input should be detected and suitable error messages should be generated.
- Sample inputs are just indicative.
- Please do the programs in your free time either from System Software Lab (SSL) / Network Systems Lab (NSL), when the lab is not used for regular lab hours or do the programs using your own computer. Even if the programs work in your own computer, there is a chance that they may not work properly in the computers in SSL / NSL, due to some compatibility issues of the C compiler or the machine. Hence, before the evaluation day, check that your programs are ready for execution in the computers in NSL/SSL.
- Evaluation of few random questions from the following questions will be conducted on **26, July 2018 (Thursday)**.

PART B: ARRAYS

1. Write a C program that reads an array of n integers and counts the frequency of each element in the array. Print the frequency of each element in the array.

Input:	Size of the array(n)	6
	Array Elements	2, 4, 2, 5, 4, 2
Output:	Frequency of elements	2 3
		4 2
		5 1

2. Write a program that prints the element at kth position from an array of 'n' integers. Also, delete the element at kth position from the array and reprint the array. Print 'INVALID INDEX' when the given position is out of array bound.

Input:	Size of the array(n)	5
	Array Elements	34, 23, 2, 5, 10
	Position(k)	4
Output:	Element at 4 th Position is	5
	Resultant array	34, 23, 2, 10

3. Write a program that finds the largest odd integer in the array of integers.

Input: Size of the array 6
 Array Elements 3, 678, 345, 876, 29, 14
Output: The largest odd integer is 345

4. Write a C program that reads an array of n integers and finds the sum of the contiguous subarray, which has the largest sum in the array. Print the largest sum, start index and end index of the contiguous subarray. Contiguous subarray is a continuous series of elements in the array.

Input: Size of the array(n) 8
 Array Elements 10, -2, 15, 9, -8, 12, 20, -5
Output: The Largest sum is 56 and the subset index begins at 0 and ends at 6

Input: Size of the array(n) 6
 Array Elements 3, 34, -4, 12, -5, 2
Output: The Largest sum is 45 and the subset index begins at 0 and ends at 3

5. Write a C program that splits the array of integers at kth position. Append the first part of the array to the end of the array and print the resultant array. Print 'INVALID INDEX' if the given position is outside the array index bound.

Input: Size of the array 6
 Array Elements 3, 678, 345, 876, 29, 14
 Enter the position of the element to split the array 4
Output: Resultant array is 876, 29, 14, 3, 678, 345

Input: Size of the array 6
 Array Elements 3, 678, 345, 876, 29, 14
 Enter the position of the element to split the array 10
Output: INVALID INDEX

6. Write a program that reads two one dimensional arrays of 'n' integers and two additional integers 'x' and 'y'. Replace each occurrence of 'x' with 'y' in the given array. Print the resultant array. Print 'NOT FOUND' if 'x' is not present in the given array.

Input: Size of the array 5
 Array Elements 345, 234, 678, 987, 234
 Enter the element to be replaced 234
 Enter the element to be inserted 593
Output: Resultant array is 345, 593, 678, 987, 593

Input:	Size of the array	5
	Array Elements	345, 234, 678, 987, 234
	Enter the element to be replaced	230
	Enter the element to be inserted	593
Output:	230 is 'NOT FOUND' in the array.	

7. Write a program that reads a two dimensional array (matrix) of integers with 'm' rows and 'n' columns. Find the transpose of the matrix and print the matrix. Transpose of a matrix is formed by turning all the rows of a given matrix into columns and vice-versa.

Input:	Enter the value of m	2
	Enter the value of n	3
	Elements of the matrix	1 2 3 4 5 6
Output:	1 4 2 5 3 6	

8. Write a program that reads two integer arrays A and B of size 'm' and 'n' respectively. Merge arrays A and B into a single array by avoiding repeated elements. Print the resultant array.

Input:	Size of the first array	5
	Array Elements	5, 15, 8, 50, 40
	Size of the second array	7
	Array Elements	8, 50, 10, 2, 15, 5, 7
Output:	Merged array	5, 15, 8, 50, 40, 10, 2, 7

9. Write a program to find the second largest element and smallest element from an array of integers. Print the second largest and smallest element of the array.

Input:	Size of the array	8
	Array Elements	7, 6, 81, 3, 17, 24, 1, 100
Output:	Second largest number in the array is	81
	Smallest element in the array is	1

10. Write a program that cyclically permutes the elements of an array of integers. In the Cyclic Permutation of an array, the first element becomes last element, second element becomes first element, third element becomes second element, and so on.

Input:	Size of the array	5
	Array Elements	3, 40, 100, 68, 25
Output:	Cyclically Permuted array is	40, 100, 68, 25, 3