Document: **Lab Manual**
Course: **Design and Analysis of Algorithms- Practical's**
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Department of Mathematics & Computing

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LAB ASSIGMENT NO. – 1- Review(Related to Array and String used in data structure of algorithms)

S No	Program Name
1	Write a program to generate the Armstrong numbers from N to M.
2	Write a program to implement the Formula $_nC_r$.
3	Write a program to print the following sequence of numbers 0,1,1,2,3,5,8,13,21,34………..
4	Twenty five numbers are entered from the keyboard into an array. The number to be searched is entered through the keyboard by the user. Write a program to find if the number to be searched is present in the array and if it is present, display the number of times it appears in the array.
5	Twenty five numbers are entered from the keyboard into an array. Write a program to find out how many of them are positive, how many are negative, how many are even and how many odd.
6	Write a program using array in which find maximum and second maximum number.
7	Write a program to merge the two array A and B of size m and n respectively in one sorted array C of size M + N
8	There are two arrays A and B. A contain 25 elements, whereas, B contains 30 elements. Write a function to create an array C that contains only those elements that are common to A and B.
9	Write a program to insert the new element in array at given location k.
10	Write a program to search the location of a given element in array and after searching delete that element from array.
11	Write a program to print the sum of the diagonal element of the M*N square matrix.
12	Write a program to multiply any two matrixes also with condition of matrix multiplication.
13	Write a program to find the maximum element in a array & find how many times it is coming in a array of size n.
14	Write a program to print the transpose of m*n matrix using pointer
15	Write a program a program to check a given string is palindrome or not (the user should give the string).

LAB ASSIGMENT NO. – 2

S No	Program Name
1	The minimax search procedure.
2	The 8-puzzle problem, computing complexity.
3	Air cargo transport problem, computing complexity.
4	Recursive algorithm: worst case, average case, beast case.
5	Analyzing O, Ω, Θ-notation through examples and comparison of time complexity.

LAB ASSIGMENT NO. – 3

S No	Program Name
1	Greedy algorithm: an activity selection problem.
2	The 0-1 knapsack problem, fractional knapsack problem.
3	Describing an efficient algorithm for a given set, say, $\{x_1, x_{2,\dots} x_n\}$ of points in the real line. Determine the smallest set of unit length.

LAB ASSIGMENT NO. – 4

S No	Program Name
1	Divide and conquer algorithm for matrix chain multiplication problem.
2	The task schedule algorithm.
3	Round-robin tournament game algorithm.
4	The adjacency matrix structure algorithm.

LAB ASSIGMENT NO. – 5

S No	Program Name
1	Graph traversal procedure- web spider crawler data collection search engine.
2	DFS algorithm, back tracking, linear time algorithm and complexity.

LAB ASSIGMENT NO. – 6

S No	Program Name
1	Single shortest algorithm.
2	Huffman: Greedy algorithm, MST algorithm.

LAB ASSIGMENT NO. – 7

S No	Program Name
1	Kruskal's algorithm for minimal spanning tree.
2	Prim's algorithm for minimal spanning tree.

LAB ASSIGMENT NO. – 8

S No	Program Name
1	BFS technique for leave vortex
2	Back-tracking algorithm for a shortest path.

LAB ASSIGMENT NO. – 9

S No	Program Name
1	Dijkstras algorithm for shortest path.
2	Dijkstras algorithm for negative weights.

LAB ASSIGMENT NO. – 10

S No	Program Name
1	Bruteforce algorithm to find optimal solution.
2	Approximation algorithms for polynomial time

LAB ASSIGMENT NO. – 11 and 12

S No	Program Name
1	Vortex cover algorithm for np-completeness.
2	DFT and FFT algorithms.

LAB ASSIGMENT NO. – 13

S No	Program Name
1	Lab exam which includes to write one program out of three choices within span of one hour followed by viva-voce and lab register verification.