Advanced College of Engineering and Management
Lab Manual
Subject : Data Structure and Algorithm
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Students are adviced to mention the following in their lab reports:
Lab Title
Objectives
Related Theory
Diagrams and Tables (if any)
Codes
Outputs
Discussion and Conclusions.

Lab 1 : Revision of C Programming

1. Write a program to add two numbers in C- programming. (Formatted input/outpur, Unformatted input/output)
2. Write a program to display n natural number(upto 100) and find their sum(using loop).
3. Write a program to add all the elements of array.(Both static and dynamic)
4. Write a program to find area of square and rectangle using functions.
5.Write a program to add two numbers using pointers.

Lab 2: Stack

1. Write a program to implement stack Operations.

Lab 3. Stack Cont.

1. Write a program to convert.
    a. postfix to infix expression
    b. infix to prefix expression
    c. infix to postfix expression
2. Write a program to evaluate postfix expressions.

Lab 4 : Queue

1. Write a program for array implementation of linear queue.
2. Write a program to implement circular queue with scarifying one cell in C.
3. Write a program to implement circular queue without scarigying one cell in C.
4. Implement ascending priority queue in C.

lab 5: Recursion

1. WAP to calculate factorial of a number using recursive function.
2.WAP to generate Fibonacci series upto n terms using recursive function.
3. WAP to find nth term of fibonacci series using recursion.
4. WAP to find sum of first n natural numbers using recursion.

5. WAP to find reverse of a given number using recursion.
6. WAP to find reverse of a given string using recursion.

Lab 6 : Recursion Contd

1.Implement Solution of tower of Hanoi using recursion.
2.WAP to find the Highest common factor(greatest common divisor) of any two numbers by using recursion.
3.WAP to find value of x^n (Where x and n are any two numbers) by using recursion.
4. WAP to find given number is palindrome or not .
5. WAP to find given string is palindrome or not. (Note string “madam” is palindrome but “laxmi ” is not.)
6. WAP to implement tail recursion.

Lab 7 : List

1. Write a program to implement list and its operations.
2.Write a program to perform following operation in singly linked list
    1.Insert at first position
    2.Insert at given position
    3.Insert at last position
    4. Delete first
    5.Delete last
3. Write a program to perform following operation in doubly linked list
    1.Insert at first position
    2.Insert at given position
    3.Insert at last position
    4. Delete first
    5.Delete last

lab 8 : Sorting

1. WAP to implement bubble sort.
2.WAP to implement selection sort.
3. WAP to implement insertion sort.
4. WAP to implement quick sort.
5.WAP to implement merge sort.
6.WAP to implement shell sort.
7. WAP to implement radix sort.
8. WAP to implement heap sort.

Lab 9 : Searching and Hashing

1.WAP to implement sequential search.
2.WAP to implement binary search.
3.WAP to implement linear probing.

Lab 10.Trees and Graphs

1. WAP to perform following operations in Binary Search Tree
    1.Insert as Root
    2. insert Element
    3.Preorder Traversal
    4.Inorder Traversal
    5.Postorder Traversal
    6.Print Leaf Nodes
    7.Print one child nodes
    8. Print tow child nodes
    9. count nodes

2.WAP to implement Breadth First Search(BFS)
3. WAP to implement Deapth First Search (DFS)
4. Implement Kruskal’s algorithm to find Minimum Spanning Tree .