Nagar Yuwak Shikshan Sanstha's
YESHWANTRAO CHAVAN COLLEGE OF ENGINEERING
(An Autonomous Institution affiliated Rashtrasanth Tukadoji Maharaj Nagpur University, Nagpur)
HINGNA ROAD, WANADONGRI, NAGPUR

DEPARTMENT OF INFORMATION TECHNOLOGY

Academic Year: 2025-26(ODD)

Course: Data Structure and Program Design Lab **Sem.: III** **Section: A ,B&C**
Course Code: 23IT1302 **Teaching Scheme: 2 Hrs/Week**

List of Practical's

Expt. No.	Name of Experiment / Problem Statement	CO
	MSPA-1	
1 A.	Write a program to accept '**n**' numbers into an array and then calculate the sum of numbers present in odd positions and even positions respectively.	
B.	Write a program to implement a Binary Search algorithm. Write a **search** function which takes a SearchList as its first parameter and a Comparable as its second. If either parameter is null, or if the SearchList is empty, you should return **NULL**. implement the following algorithm: • Examine the value in the middle of the current array and print it. • If the midpoint value is the value that we are looking for, return true • If the value that we are looking for is greater than the midpoint value, adjust the current array to start at the midpoint and print the index. • if the value that we are looking for is less than the midpoint value, adjust the current array to end at the midpoint and print the index. • Continue until you find the value, or until the start reaches the end,	
C.	Write a program which creates a structure Student which must have the attribute **Avg Marks** with 3 more attributes sort the list of the student in descending order using **Bubble sort.**	
2	Design, Develop and Implement a menu driven Program in C for the following operations on STACK of Integers (Array Implementation of Stack with maximum size MAX) a. Push an Element on to Stack b. Pop an Element from Stack c. Demonstrate how Stack can be used to check Palindrome d. Demonstrate Overflow and Underflow situations on Stack e. Display the status of Stack f. Exit Support the program with appropriate functions for each of the above operations.	
	MSPA-2	
3	Design, Develop and Implement a menu driven Program in C for the following operations on QUEUE of Characters (Array Implementation of Queue with maximum size MAX) a. Insert an Element on to QUEUE b. Delete an Element from QUEUE c. Demonstrate Overflow and Underflow situations on QUEUE d. Display the status of QUEUE e. Exit Support the program with appropriate functions for each of the above operations.	

4	This C program creates a linked list to store integer elements. It prompts the user to enter elements and add them to the list until the user enters 0. It then traverses the list and prints each element and "=>" until reaching the null pointer. Finally, it displays the number of nodes in the list.	
	MSPA-3	
5	Write a program to insert Number of Nodes in the Binary Tree and Traverse in Inorder , Preorder and Post Order and Search an element in Binary Tree(Display NULL if not found, If found Display Found)	
6	Implement Binary search tree(BST) with following Menu operations. 1. Search an element in BST(Display NULL if not found, If found Display Found) 2. Insert an element in BST 3. Delete leaf element in BST 4. Exit	
	MSPA-4	
7	Consider the undirected graph G, consisting of **n** nodes laid out in a 3 -by- 3 grid: Start searching at node 1, and break ties for exploring the next node based on lower numerical order (i.e. add nodes to a queue low to high, add nodes to a stack high to low). (a) In what order are nodes marked as explored by BFS? (b) In what order are nodes marked as explored by DFS?	
8	Write a program which accepts undirected graph and a starting node, determine the lengths of the shortest paths from the starting node to all other nodes in the graph. If a node is unreachable, its distance is -1. Nodes will be numbered consecutively from 1 to n, and edges will have varying distances or lengths. Find the sub tree using Dijikstra algorithm.	
9	Assume that you have a seven-slot closed hash table (the slots are numbered o through 6) Write program to final hash table that would result if you used the hash function h(k) - k mod 7.	
10	Write a C program (name it "filecopy. c") that copies the contents of one file to a destination file. This program will read data from one file and copy them to another. The first input that the program will need is the names of the two files: input file ("input.txt") and output file ("output.txt"). Once the two file names have been obtained, the program must open the input file and create and open the output file.	

Dr.B.U.Bawankar
Mr. S. S. Chavhan **Dr. R. C. Dharmik**
Mrs.P.V.Matre
Course Teacher **HOD, IT**