

GANPAT UNIVERSITY
U. V. PATEL COLLEGE OF ENGINEERING
DEPARTMENT OF CE/IT
ACADEMIC YEAR: JAN - MAY 2023

Subject: 2CEIT402: Design & Analysis of Algorithm

Sem/Branch: B. Tech 4th (CE/IT/CE-AI)

PRACTICAL LIST

1. Implement a function for each of the following problems and count the number of steps executed/Time taken by each function on various inputs and write complexity of each function. Also draw a comparative chart. In each of the following functions N will be passed by user.

1. To calculate the sum of 1 to N number using loop.
2. To calculate the sum of 1 to N number using the equation.
3. To calculate sum of 1 to N numbers using recursion.
2. Implement functions to print nth Fibonacci number using iteration and recursive methods.

Compare the performance of two methods by counting the number of steps executed on various inputs. Also draw a comparative chart. (Fibonacci series 1, 1, 2, 3, 5, 8..... Here 8 is the 6th Fibonacci number)

3. Write user defined functions for the following sorting methods and compare their performance by time measurement with random data and Sorted data.

1. Selection Sort
2. Bubble Sort
3. Insertion Sort
4. Merge Sort
5. Quick Sort
6. Randomized Quick Sort

4. Implement a function of Sequential Search & Binary Search and count the steps executed by function on various inputs for best case and worst case. Also write complexity in each case and draw a comparative chart.

5. Implement a program of Counting Sort.
6. Implement Program for fractional knapsack using Greedy design technique.
7. Implement Program for “Making Change” using Greedy design technique.
8. Implement Program for “Making Change” using Dynamic Programming.
9. Implementation of a knapsack problem using dynamic programming.
10. Implement N Queen's problem using Backtracking.