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 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 function N will be passed by user.
   1. To calculate sum of 1 to N number using loop.
   2. To calculate sum of 1 to N number using equation.
   3. To calculate sum of 1 to N numbers using recursion.
2. Implement functions to print n^{th} Fibonacci number using iteration and recursive method. Compare the performance of two methods by counting number of steps executed on various inputs. Also draw a comparative chart. (Fibonacci series 1, 1, 2, 3, 5, 8….. Here 8 is the 6^{th} 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
4. Implement a function of sequential 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 function of 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.
6. Implement program for randomized version of quick sort and compare its performance with normal version of quick sort using steps count on various number of inputs.
7. Implement program of Counting Sort.
8. Implement Program for fractional knapsack using Greedy design technique.
9. Implement Program for “Making Change” using Greedy design technique.
10. Implement Program for “Making Change” using Dynamic Programming.