Page No.
Date

Problem statement:-

write a program to calculate fibonacci numbers & find its step count.

objective:-

fibonacci numbers are used throughout society It is astonishing how these sets of never-ending numbers are used in various ways
fibonacci numbers are very unique compared to the other mathematical subjects.

Theory :-

fibonacci Numbers:-

The fibonacci frequency is a set of integers that start with zero followed by an one by another one & then by a series of steadily increasing numbers. There sequence follows the rule that each number is equal to the sum of the preceding two numbers.

The fibonacci sequence begins with the following 14 integers:

0, 1, 2, 3, 5, 8, 13, 21, 34 ....

Calculating the fibonacci sequence:-

The fiboracci sequence can be calculating mathematically. In this approach each a term which the sequence is considered a term which is represented by the expression function.

The 'n' reflects the numbes position in the sequence starting with zero for example, the sixth learn is reffered to as f5 & the seventh term is reffered to as f6.

F0 = 0 (applies only to first integes)
f1 = 1 (applies only to second integer)
. fn = fn-1 + fn-2 (applies to all other ints

Important notes on fibonacci Numbers:-
Here is a list of a few point should be remembered while studying the fiboracci numbers.

- The concent of fibonacci numbers is only applicable to whole numbers is & decimal numbers from a finanaccieu expression.
- The first fibonacci number is always & the second fibonacci numbes is always 1.

Page No.
Date

Conclusion::

Thus we have studied about the Fibonacci numbers.

Page No.
Date

Practical NO:.

problem statement:.
Implement job sequencing with deadline using greedy method.

objective:.
To find the sequence of jobs which is completed within their deadlines & given maximum profit. If a set of 'n' jobs are given which are associated with deadlines & profit is earned & job is completed by its deadline.

Theory:.
Given an array of jobs where every job has a deadline & associated profit. if the job is finished before the deadline It is algorithm given that every job takes single unit time, so the minimal possible deadline for any job is by default 1. How to maximize total profit if only one job can be scheduled to at a time.

Example:.

Page No.
Date

Input: Four jobs with following deadline & profits.

job Id	deadlines	profit
a	4	20
b	1	10
c	1	40
d	1	30

output c, a.

Greedy approach for Job sequencing problem:
Greedy chose the jobs with maximum profit first, by sorting the jobs in increasing order of their profit. would help to maximize the total profit as choosing the job with maximum profit for every time slot will evenly maximize the total profit.

Conclusion:
Thus, we implemented job sequencing with deadline using a greedy method which is completed within their deadline & gives maximum profits.

Page No.
Date

Practical No:

Problem statement:
write a program to solve a fractional knapsack problem using a greedy method.

Objective:
A greedy method makes greedy choices at each step to ensure that the objective function is optimized.

To fill the knapsack of some given values with different materials such that the value of selected items is maximized.

Theory:
The Greedy algorithm are simple & straight forward. They are short sighted in their approach in the sense that they take decisions on the information at hand without worrying about the effect these decision may have in the future they are easy to implement & most of the time quite efficient, many problems cannot algorithms are used to solve. optimization problems

Greedy Approach:-
Greedy algorithms work by making the decision that seems most promising at any moment. It never reconsidered this

decision whatever situation may arise later.

Knapsack problems:
There are two versions of knapsack problem

1) Fractional knapsack problem:
it is also one of the technique which are used to solve the knapsack problem.
In Fractional knapsack problem, the items are broken in order to maximize profit. The problem in which we break the items is known as the fractional knapsack problem.

2) 0-1 knapsack problem:-
The 0|1 knapsack problem means the the items are either completely no items are having weight 2kg & respectively.
If we pick the 2kg item then cannot pick 1 kg item from 2 kg item we have to pick the 2 kg item completely.

Page No.
Date

Conclusion:

Thus we studied about the knapsack problem using a Greedy method.

Page No.
Date

Practical No:

problem statement:
write a program to generate a binomial coefficient using Dynamic programming

objective:
The binomial coefficient is the binomial theorm which is an arithemetic expre fs expression. It is denoted as (N,K) which is equal to N!(K! * (N-K)!) where '!' denotes the functiomial.

This follows a recursive relation using which we will calculate the N binomial coefficient in linear time O(N*K) using DP.

Binomial theorem is also called as binomial expansion do linear the powers in algebraic equations. Binomial theorem helps us to find the expanded polynomial will always contain one more than powee you are expanding

$$(x-a)^n = \sum_{k=0}^{n} (kn)\, x * a^{n-k}$$

where
Σ = known as 'Sigma notations' Used sum all the terms in expansion from k=0 to k=n

n= positive integer powers of algebraic

equation.

(Kn) = read as , n choose k.

Binomial coefficient is calculate by computing according to the following equation.

$$(n, k) = \frac{n!}{(n-k)! * k!}$$

Conclusion:

Thus, we have studied about generating binomial coefficient using dynamic programming.