DESIGN AND ANALYSIS OF ALGORITHMS

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FRACTIONAL KNAPSACK PROBLEM

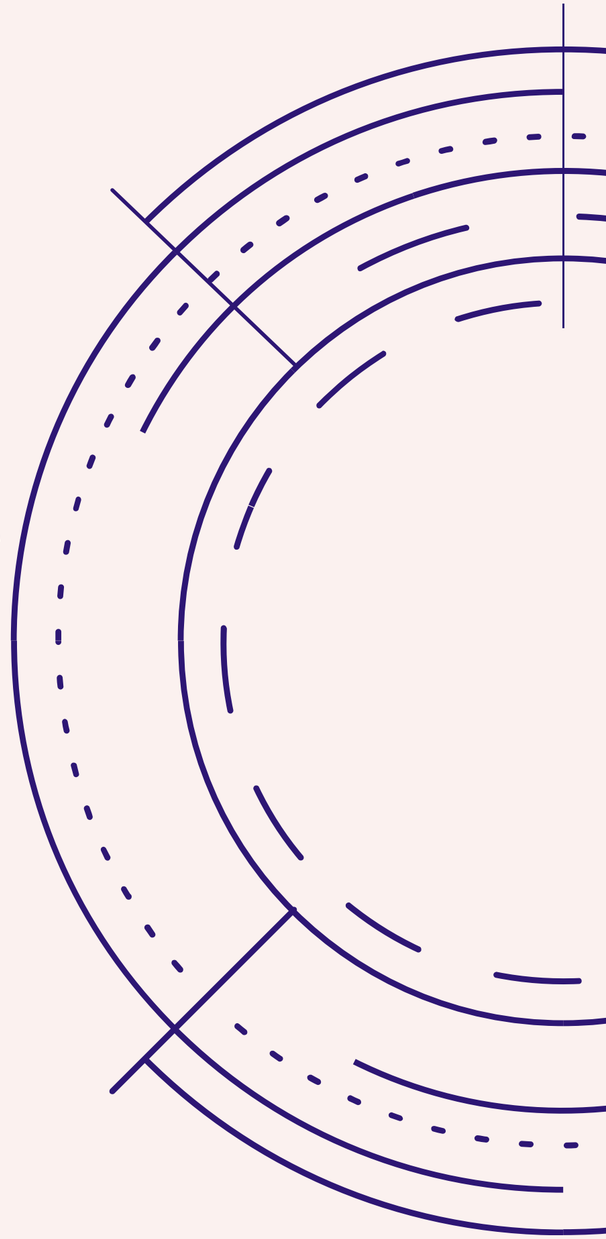
THE PROBLEM STATES-

Which items should be placed into the knapsack such that-

- The value or profit obtained by putting the items into the knapsack is maximum.
- And the weight limit of the knapsack does not exceed.

GREEDY METHOD

An this approach, the decision is taken on the basis of current available information without worrying about the effect of the current decision in future. Greedy algorithms build a solution part by part, choosing the next part in such a way, that it gives an immediate benefit. This approach never reconsiders the choices taken previously. This approach is mainly used to solve optimization problems. Greedy method is easy to implement and quite efficient in most of the cases. Hence, we can say that Greedy algorithm is an algorithmic paradigm based on heuristic that follows local optimal choice at each step with the hope of finding global optimal solution.



GREEDY METHOD APPROACH

In Fractional Knapsack, we can break items for maximizing the total value of knapsack. This problem in which we can break an item is also called the fractional knapsack problem.
An efficient solution is to use Greedy approach. The basic idea of the greedy approach is to calculate the ratio value/weight for each item and sort the item on basis of this ratio. Then take the item with the highest ratio and add them until we can’t add the next item as a whole and at the end add the next item as much as we can. Which will always be the optimal solution to this problem.

BE INSPIRED

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THANK YOU