

Experiment No.:-3

Write a program to solve a fractional Knapsack problem using a greedy method.

Source Code:-

```
In [1]: class Item:
    def __init__(self, profit, weight):
        self.profit = profit
        self.weight = weight

    def fractionalKnapsack(w, arr):
        arr.sort(key=lambda x: x.profit/x.weight, reverse=True)
        finalValue = 0.0
        for item in arr:
            if w >= item.weight:
                finalValue += item.profit
                w -= item.weight
            else:
                finalValue += item.profit * (w/item.weight)
                break
        return finalValue

if __name__ == "__main__":
    n = int(input("Enter number of items-\n"))
    arr = []
    for i in range(n):
        profit = int(input("Enter profit of item " + str(i + 1) + "-\n"))
        weight = int(input("Enter weight of item " + str(i + 1) + "-\n"))
        arr.append(Item(profit, weight))
    w = int(input("Enter capacity of knapsack-\n"))
    print("Maximum value in knapsack: ", fractionalKnapsack(w, arr))
```

```
Enter number of items-  
5  
Enter profit of item 1-  
30  
Enter weight of item 1-  
5  
Enter profit of item 2-  
40  
Enter weight of item 2-  
10  
Enter profit of item 3-  
45  
Enter weight of item 3-  
15  
Enter profit of item 4-  
77  
Enter weight of item 4-  
22  
Enter profit of item 5-  
90  
Enter weight of item 5-  
25  
Enter capacity of knapsack-  
60  
Maximum value in knapsack: 230.0
```

In []: