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 [ ]: