

**Program:**

# Class to represent an item in the Knapsack

class Item:

def \_\_init\_\_(self, value, weight):

self.value = value

self.weight = weight

self.ratio = value / weight

# Function to solve the Fractional Knapsack problem using Greedy strategy

def fractional\_knapsack(capacity, items):

# Sort items by value-to-weight ratio in decreasing order

items.sort(key=lambda x: x.ratio, reverse=True)

total\_value = 0 # Total value of knapsack

for item in items:

if capacity >= item.weight:

# If the item can be fully taken, take it

capacity -= item.weight

total\_value += item.value

else:

# Take the fraction of the remaining item

total\_value += item.value \* (capacity / item.weight)

break

return total\_value

# Input

n = int(input("Enter the number of items: "))

items = []

for i in range(n):

value = int(input(f"Enter value of item {i+1}: "))

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weight = int(input(f"Enter weight of item {i+1}: "))
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items.append(Item(value, weight))
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capacity = int(input("Enter the capacity of the knapsack: "))
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# Perform the greedy strategy to solve the knapsack problem
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max_value = fractional_knapsack(capacity, items)
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print(f"Maximum value in Knapsack = {max_value}")
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### Output:



The screenshot shows a Python IDE interface with a terminal window. The terminal displays the execution of a program that solves a knapsack problem using a greedy strategy. The user is prompted to enter the number of items (3), the value and weight for each item, and the capacity of the knapsack (50). The program outputs the maximum value in the knapsack as 240.0.

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PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS Python + v
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PS C:\Users\katur\Music\DAA practicals> & C:/Users/katur/AppData/Local/Programs/Python/Python312/python.exe "c:/Users/katur/Music/DAA practicals/practical5..py"
Enter the number of items: 3
Enter value of item 1: 60
Enter weight of item 1: 10
Enter value of item 2: 100
Enter weight of item 2: 20
Enter value of item 3: 120
Enter weight of item 3: 30
Enter the capacity of the knapsack: 50
Maximum value in Knapsack = 240.0
PS C:\Users\katur\Music\DAA practicals> |
```