

Source Code :

```
class Item:
    def __init__(self, value, weight):
        self.value = value
        self.weight = weight
        self.ratio = value / weight

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

    total_value = 0
    remaining_capacity = capacity

    for item in items:
        if item.weight <= remaining_capacity:
            remaining_capacity -= item.weight
            total_value += item.value
        else:
            fraction = remaining_capacity / item.weight
            total_value += item.value * fraction
            break

    return total_value

def main():
    n = int(input("Enter the number of items: "))
    items = []

    for i in range(n):
        value = float(input(f"Enter the value of item {i + 1}: "))
        weight = float(input(f"Enter the weight of item {i + 1}: "))
        items.append(Item(value, weight))

    capacity = float(input("Enter the capacity of the knapsack: "))
```

```
max_value = fractional_knapsack(capacity, items)
```

```
print(f"Maximum value that can be put in the knapsack: {max_value:.2f}")
```

```
if __name__ == "__main__":
```

```
    main()
```

OUTPUT :



The screenshot shows a terminal window with the following content:

```
e -> 111
PS D:\Data science> python -u "d:\Data science\daa3.py"
Enter the number of items: 3
Enter the value of item 1: 60
Enter the weight of item 1: 10
Enter the value of item 2: 100
Enter the weight of item 2: 20
Enter the value of item 3: 120
Enter the weight of item 3: 30
Enter the capacity of the knapsack: 50
Maximum value that can be put in the knapsack: 240.00
PS D:\Data science>
```

The terminal window has a title bar with tabs for PROBLEMS, OUTPUT, TERMINAL, PORTS, POSTMAN CONSOLE, and SQL CONSOLE. The TERMINAL tab is active. The output shows the execution of a Python script that prompts for the number of items, their values and weights, and the knapsack capacity, then calculates and displays the maximum value that can be put in the knapsack.