DAA-Practical - 3

CODE

```
import java.util.*;
class Item {
    int value, weight;
    Item(int value, int weight) {
        this.value = value;
        this.weight = weight;
    }
}

public class FractionalKnapsack {

    static double fractionalKnapsack(int W, List<Item> items) {
        items.sort((a, b) -> Double.compare((double)b.value / b.weight, (double)a.value /
a.weight));
        double totalValue = 0.0;
        int currWeight = 0;

        for (Item item : items) {
            if (currWeight + item.weight <= W) {
                currWeight += item.weight;
                totalValue += item.value;
            } else {
                int remain = W - currWeight;
                totalValue += item.value * ((double) remain / item.weight);
                break;
            }
        }
        return totalValue;
    }

    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter number of items: ");
        int n = sc.nextInt();
        List<Item> items = new ArrayList<>();
        System.out.println("Enter value and weight of each item:");
        for (int i = 0; i < n; i++) {
            int value = sc.nextInt();
            int weight = sc.nextInt();
            items.add(new Item(value, weight));
        }
```

```
        System.out.print("Enter knapsack capacity: ");
        int W = sc.nextInt();
        double maxValue = fractionalKnapsack(W, items);
        System.out.println("Maximum value in Knapsack = " + maxValue);

    }
}
```

OUTPUT

```
Enter number of items: 3
Enter value and weight of each item:
60 10
100 20
120 30
Enter knapsack capacity: 50
Maximum value in Knapsack = 240.0
```