Experiment No. 6

Implement in Java, the **0/1 Knapsack** problem using
(a) Dynamic Programming method
(b)Greedy method.

```
import java.util.*;
public class greedy {

		public static void main(String[] args) {
		int i,j=0,m,n;
		float sum=0,max,ratio;
		Scanner sc= new Scanner(System.in);
		int a[][]= new int[2][20];
		System.out.println("enter the number of  objects");
		n= sc.nextInt();
		System.out.println("enter the weights of the objects");
		for(i=0;i<n;i++)
			a[0][i]= sc.nextInt();
		System.out.println("enter the profits");
		for(i=0;i<n;i++)
			a[1][i]=sc.nextInt();
		System.out.println("enter the capacity of knapsack");
		m=sc.nextInt();
		while(m>0)
		{
			max=0;
			for(i=0;i<n;i++)
			  {
				ratio= (float)a[1][i]/a[0][i];
			if(ratio>max)
			{
				max=ratio;
				j=i;
			 }

			   }
			if(a[0][j]>m)
			{
				 System.out.println("Quantity of Item Number :"+(j+1)+ "
is added and the weight is " +m);

							sum+=m*max;
							m=-1;

			}
			else
			{
				System.out.println("Quantity of Item Number:" +(j+1) +" is
added and the weight is  "+a[0][j]);
				m= m-a[0][j];
				sum+=a[1][j];
				a[1][j]=0;
			}
```

```
             }
            System.out.println("The total profit is " +sum);
            }
}

/*
 OUTPUT
  enter the number of  objects
5
enter the weights of the objects
5
10
20
30
40
enter the profits
30
20
100
90
160
enter the capacity of knapsack
60
Quantity of Item Number:1 is added and the weight is  5
Quantity of Item Number:3 is added and the weight is  20
Quantity of Item Number :5 is added and the weight is 35
The total profit is 270.0
*/
```