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Lab 04( Que 1)

Write a program to implement Fractional Knapsack .

**Program Code : C++**

#include <iostream>

#include <bits/stdc++.h>

using namespace std;

//1.Take profit/weight ratio and sort in decreasing order.

//2.Take the sum weight till sum is not exceed capacity.

//3.Output the maximum profit or all the included weights.

struct Object{

float weight;

float profit;

float PWratio;

};

bool cmp(struct Object a, struct Object b)

{

return a.PWratio > b.PWratio;

}

void KnapSackFractional(Object a[],int n,int capacity){

sort(a,a + n,cmp);

float p=0;

for(int i=0;i<n;i++){

if(a[i].weight<=capacity){

p+=a[i].profit;

capacity-=a[i].weight;

}

else if(capacity!=0){

a[i].PWratio= capacity/a[i].weight;

p+=a[i].PWratio\*a[i].profit;

capacity-=a[i].PWratio\*a[i].weight;

}

}

cout<<"Profit :"<<p;

}

int main(){

int no,capacity;

cout<<"Enter Capacity: ";

cin>>capacity;

cout<<"Enter Total Objects: ";

cin>>no;

Object Arr[no];

for(int i=0;i<no;i++){

cout<<" Profit "<<i+1<<" : "; cin>>Arr[i].profit;

cout<<" Weight "<<i+1<<" : "; cin>>Arr[i].weight;

Arr[i].PWratio = Arr[i].profit/Arr[i].weight;

//cout<<" Ratio "<<i<<" : "; cout<<Arr[i].PWratio<<endl;//Ratio

}

KnapSackFractional(Arr,no,capacity);

return 0;

}

**Outputs :**



