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Assignment: 6

Code:

#include<stdio.h>

#include<stdlib.h>

void knapsack(int n, float weight[], float profit[], float capacity){

float x[20], tp = 0;

int i, j, u;

u = capacity;

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

x[i] = 0.0;

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

if (weight[i] > u)

break;

else{

x[i] = 1.0;

tp = tp + profit[i];

u = u - weight[i];

}

}

if (i < n)

x[i] = u / weight[i];

tp = tp + (x[i] \* profit[i]);

printf("\nThe solution vector is: ");

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

printf("%.2f\t", x[i]);

printf("\nMaximum profit is: %.2f\n", tp);

}

int main() {

float weight[20], profit[20], capacity;

int num, i, j;

float pi[20], temp;

printf("\nEnter the no. of objects: ");

scanf("%d", &num);

printf("\nEnter the wts and profits of each object:\n");

for (i = 0; i < num; i++) {

scanf("%f %f", &weight[i], &profit[i]);

}

printf("\nEnter the capacity of knapsack: ");

scanf("%f", &capacity);

for (i = 0; i < num; i++){

pi[i] = profit[i] / weight[i];

}

for (i = 0; i < num; i++) {

for (j = i + 1; j < num; j++) {

if (pi[i] < pi[j]) {

temp = pi[j];

pi[j] = pi[i];

pi[i] = temp;

temp = weight[j];

weight[j] = weight[i];

weight[i] = temp;

temp = profit[j];

profit[j] = profit[i];

profit[i] = temp;

}

}

}

printf("The weights according to decreasing orders of profit indexes : ");

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

printf("%d ",(int)weight[i]);

}

knapsack(num, weight, profit, capacity);

return(0);

}

Output:

