**Report No:** 01

**Report Name:** WAP to find out maximum profit and show knapsack Array of taken products by Greedy Design Algorithm

**Code:**

#include<iostream>

using namespace std;

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

float x[n], 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]);

cout << "Unit per taken: " << endl;

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

cout << "Object no " << (i+1) << " is: " << (x[i] \* weight[i]) << " kg" <<endl;

}

cout << "\nMax profit: " << tp ;

}

int main() {

int num, i, j;

cout << "Total No. of objects: ";

cin >> num;

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

float ratio[num], temp;

cout << "Enter Weight and profits for each object: " <<endl;

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

cout << (i+1) << " No. object Profit is: ";

cin >> profit[i];

cout << (i+1) << " No. object Weight is: ";

cin >> weight[i];

}

cout << "Enter total capacity: ";

cin >> capacity;

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

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

}

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

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

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

temp = ratio[j];

ratio[j] = ratio[i];

ratio[i] = temp;

temp = weight[j];

weight[j] = weight[i];

weight[i] = temp;

temp = profit[j];

profit[j] = profit[i];

profit[i] = temp;

}

}

}

knapsack(num, weight, profit, capacity);

}

**Input :**

Total No. of objects: 5

Enter Weight and profits for each object:

1 No. object Profit is: 10

1 No. object Weight is: 3

2 No. object Profit is: 15

2 No. object Weight is: 3

3 No. object Profit is: 10

3 No. object Weight is: 2

4 No. object Profit is: 12

4 No. object Weight is: 5

5 No. object Profit is: 8

5 No. object Weight is: 1

Enter total capacity: 5

**Output:**

Unit per taken:

Object no 1 is: 1 kg

Object no 2 is: 2 kg

Object no 3 is: 2 kg

Object no 4 is: 0 kg

Object no 5 is: 0 kg

Max profit: 28