Program:

#include<bits/stdc++.h>

using namespace std;

bool cmp(vector<int> a, vector<int> b){

float n1 = a[1]\*1.0/a[0];

float n2 = b[1]\*1.0/b[0];

return n1 > n2;

}

float knapsack(vector<vector<int>> v, int n, int val){

sort(v.begin(), v.end(), cmp);

float ans = 0;

float weight = 0;

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

if(weight + v[i][0] < val){

weight += v[i][0];

ans += v[i][1];

}else{

if(weight == val){

break;

}else{

// cout << weight << " -<weight" << endl;

float temp = 1 - (v[i][0] - (val - weight))\*1.0/v[i][0];

ans += v[i][1]\*1.0\*temp;

break;

}

}

}

return ans;

}

int main(){

int n;

cout << "enter size of array ";

cin >> n;

cout << "enter weight and profit :" << endl;

vector<vector<int>> v(n, vector<int> (2,0)); // weight, price

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

cin >> v[i][0] >> v[i][1];

}

int val;

cout << "enter max value of weight ";

cin >> val;

float value = knapsack(v, n, val);

cout << value << endl;

}

Output:

