

Assignment 1

```
#include <bits/stdc++.h>

using namespace std;

typedef vector<long long> vi;
typedef long long ll;
typedef vector<pair<int,int>> vp;

#define pb push_back

#define For(i,a) for (int i=0; i<a; i++)

int main() {

    // Fractional Knapsack Problem

    int total_bags, m;

    cin >> total_bags >> m;

    double final_profit = 0.0;

    int profit, weight;

    vp v_data;

    vector<pair<double, int>> ratio;

    For(i, total_bags) {

        cin >> profit >> weight;

        v_data.pb({profit, weight});

        ratio.pb({(double)profit / weight, i } );

    }

    sort(ratio.rbegin(), ratio.rend());
```

```
For(i, total_bags) {  
    int idx = ratio[i].second;  
    int item_weight = v_data[idx].second;  
    int item_profit = v_data[idx].first;  
  
    if (m >= item_weight) {  
        final_profit += item_profit;  
        m -= item_weight;  
    } else {  
        final_profit += (double)m * ratio[i].first;  
        break;  
    }  
}  
  
cout << fixed << setprecision(2) << final_profit << endl;  
}
```