# POJ 2976 精度问题。最大化平均值

[0](http://dddousha.com/2019/10/23/poj-2976-%e7%b2%be%e5%ba%a6%e9%97%ae%e9%a2%98%e3%80%82%e6%9c%80%e5%a4%a7%e5%8c%96%e5%b9%b3%e5%9d%87%e5%80%bc/" \l "comments)

IMG_256[dousha](http://dddousha.com/author/dousha/" \o "written 2019年10月23日 @ 下午9:29) written 3周 ago

是不是涉及到精度问题。。二分的时候都要for(i=0;i<100;i++) 然后要else r=mid的值啊。。。

Dropping tests

|  |  |  |
| --- | --- | --- |
| **Time Limit:** 1000MS |  | **Memory Limit:** 65536K |
| **Total Submissions:** 25222 |  | **Accepted:** 8322 |

Description

In a certain course, you take n tests. If you get ai out of bi questions correct on test i, your cumulative average is defined to be

IMG_257

.

Given your test scores and a positive integer k, determine how high you can make your cumulative average if you are allowed to drop any k of your test scores.

IMG_258IMG_259

Suppose you take 3 tests with scores of 5/5, 0/1, and 2/6. Without dropping any tests, your cumulative average is . However, if you drop the third test, your cumulative average becomes .

Input

The input test file will contain multiple test cases, each containing exactly three lines. The first line contains two integers, 1 ≤ n ≤ 1000 and 0 ≤ k < n. The second line contains n integers indicating ai for all i. The third line contains n positive integers indicating bi for all i. It is guaranteed that 0 ≤ ai ≤ bi ≤ 1, 000, 000, 000. The end-of-file is marked by a test case with n = k = 0 and should not be processed.

Output

For each test case, write a single line with the highest cumulative average possible after dropping k of the given test scores. The average should be rounded to the nearest integer.

Sample Input

3 1

5 0 2

5 1 6

4 2

1 2 7 9

5 6 7 9

0 0

Sample Output

83

100

Hint

To avoid ambiguities due to rounding errors, the judge tests have been constructed so that all answers are at least 0.001 away from a decision boundary (i.e., you can assume that the average is never 83.4997).

Source[Stanford Local 2005](http://poj.org/searchproblem?field=source&key=Stanford+Local+2005)

n个物品重量和价值分别是 wi和vi 从中去掉k个物品使得单位价值最大。。

挑战P144

条件C（x） =可以选择使得单位重量的价值不小于x

Σ vi/Σ wi >=x

变形得到

Σ（vi-x\*wi）>=0

C(x)=((vi-x\*wi) 从大到小排序中的前k个的和不小于0

每次判断的复杂度是O（nlogn）

#include<cstdio>

#include<cstring>

#include<iostream>

#include<algorithm>

using namespace std;

const long long INF=1e6;

int n,k;

int w[10000],v[10000];

double a[10000];

bool check(double x)

{

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

{

a[i]=v[i]-(double)x\*w[i];

}

sort(a,a+n);

double sum=0;

for(int i=0;i<k;i++)

{

sum+=a[n-i-1];

}

return sum>=0;

}

int main()

{

while(scanf("%d %d",&n,&k)&&(n+k!=0))

{

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

{

scanf("%d",&v[i]);

}

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

{

scanf("%d",&w[i]);

}

double l=0,r=INF;

k=n-k;

for(int i=0;i<100;i++)

{

double mid=(l+r)/2;

if(check(mid)) l=mid;

else r=mid;

}

printf("%.0f\n",r\*100);

}

return 0;

}