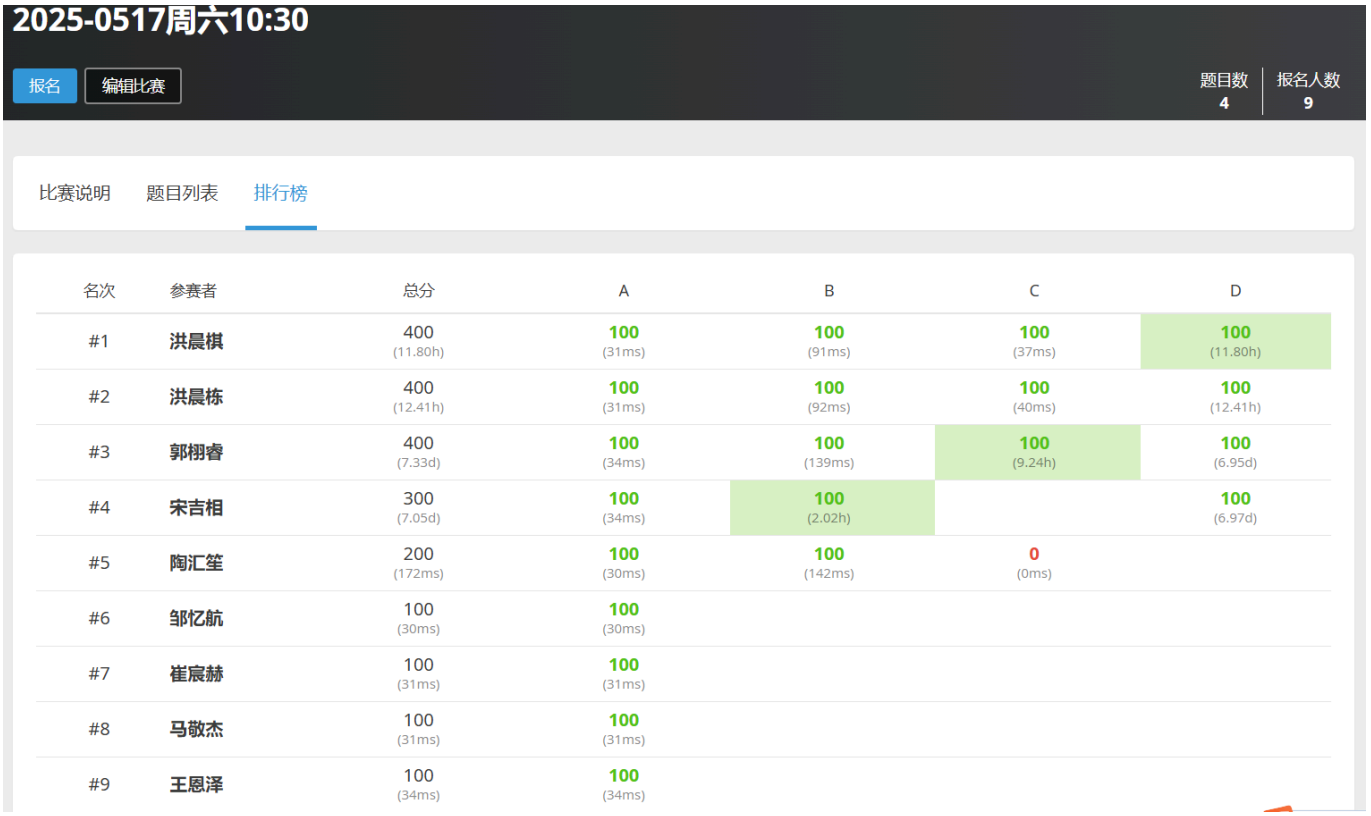
小数二分答案

人员

洪晨栋、洪晨棋、郭栩睿、宋吉相、陶汇笙、崔宸赫、邹忆航 到课, 罗启宸、王恩泽 线上

作业检查

上周作业链接: https://www.luogu.com.cn/contest/247000



2025-0517周六10:30

报名 编辑比赛

题目数 4 | 报名人数 9

比赛说明 题目列表 排行榜

名次	参赛者	总分	A	B	C	D
#1	洪晨棋	400 (11.80h)	100 (31ms)	100 (91ms)	100 (37ms)	100 (11.80h)
#2	洪晨栋	400 (12.41h)	100 (31ms)	100 (92ms)	100 (40ms)	100 (12.41h)
#3	郭栩睿	400 (7.33d)	100 (34ms)	100 (139ms)	100 (9.24h)	100 (6.95d)
#4	宋吉相	300 (7.05d)	100 (34ms)	100 (2.02h)		100 (6.97d)
#5	陶汇笙	200 (172ms)	100 (30ms)	100 (142ms)	0 (0ms)	
#6	邹忆航	100 (30ms)	100 (30ms)			
#7	崔宸赫	100 (31ms)	100 (31ms)			
#8	马敬杰	100 (31ms)	100 (31ms)			
#9	王恩泽	100 (34ms)	100 (34ms)			

作业

https://www.luogu.com.cn/contest/248472 (课上讲了 A ~ C 这些题, 课后作业是 D 题)

课堂表现

同学们课上听讲做题都比较认真, 今天的 C 题比较抽象难以理解, 同学们课下一定再多复习做几遍。

课堂内容

U552394 买整数

二分 mid, 判断能否买的起 mid 这个整数即可

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

using namespace std;
```

```
typedef long long LL;
LL a, b, c;

bool check(LL mid) {
  LL value = mid*a;
  int cnt = 0;
  while (mid) mid /= 10, cnt++;
  value += cnt*b;
  return value <= c;
}

int main()
{
  cin >> a >> b >> c;
  LL l = 1, r = 1000000000;
  while (l <= r) {
    LL mid = (l + r) / 2;
    if (check(mid)) l = mid+1;
    else r = mid-1;
  }
  cout << r << endl;
  return 0;
}
```

P8647 [蓝桥杯 2017 省 AB] 分巧克力

二分巧克力的边长 mid, 判断买的 mid*mid 的巧克力数量能否 >=k

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

using namespace std;

typedef long long LL;
const int maxn = 1e5 + 5;
int a[maxn], b[maxn];
int n, k;

bool check(int mid) {
  int res = 0;
  for (int i = 1; i <= n; ++i) {
    int x = a[i]/mid, y = b[i]/mid;
    res += x*y;
    if (res >= k) return true;
  }
  return false;
}

int main()
{
  cin >> n >> k;
```

```
  for (int i = 1; i <= n; ++i) cin >> a[i] >> b[i];

  int l = 1, r = 100000;
  while (l <= r) {
    int mid = (l + r) / 2;
    if (check(mid)) l = mid+1;
    else r = mid-1;
  }
  cout << r << endl;
  return 0;
}
```

P8800 [蓝桥杯 2022 国 B] 卡牌

二分 mid, 看最终能否凑成 mid 套

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

using namespace std;

typedef long long LL;
const int maxn = 2e5 + 5;
int a[maxn], b[maxn];
int n; LL m;

bool check(int mid) {
  LL t = 0;
  for (int i = 1; i <= n; ++i) {
    if (a[i]+b[i] < mid) return false;
    if (a[i] >= mid) continue;
    t += mid-a[i];
  }
  return t <= m;
}

int main()
{
  cin >> n >> m;
  for (int i = 1; i <= n; ++i) cin >> a[i];
  for (int i = 1; i <= n; ++i) cin >> b[i];

  int l = 1, r = 2*n;
  while (l <= r) {
    int mid = (l + r) / 2;
    if (check(mid)) l = mid+1;
    else r = mid-1;
  }
  cout << r << endl;
  return 0;
}
```

P1577 切绳子

小数二分, 设定一个 eps, 直到 r-l<=eps 停止二分即可

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

using namespace std;

const int maxn = 10000 + 5;
const double eps = 1e-5;
double w[maxn];
int n, k;

bool check(double mid) {
  int res = 0;
  for (int i = 1; i <= n; ++i) {
    int t = w[i] / mid; res += t;
  }
  return res >= k;
}

int main()
{
  cin >> n >> k;
  for (int i = 1; i <= n; ++i) cin >> w[i];

  double l = 0, r = 1000000;
  while (r-l > eps) {
    double mid = (l + r) / 2;
    if (check(mid)) l = mid;
    else r = mid;
  }
  printf("%.4f\n", l);
  return 0;
}
```

P1182 数列分段 Section II

设最大值是 mid 时, 判断能否分出 m 段

就是求 在最大值是mid时, 最少能分成多少段。然后看这个段数是否 <=m 即可

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

using namespace std;

typedef long long LL;
const int maxn = 1e5 + 5;
int w[maxn];
int n, m;
```

```
bool check(int mid) {
  int cnt = 1, sum = 0;
  for (int i = 1; i <= n; ++i) {
    if (w[i] > mid) return false;

    if (sum+w[i] <= mid) sum += w[i];
    else cnt++, sum = w[i];
  }
  return cnt <= m;
}

int main()
{
  cin >> n >> m;
  for (int i = 1; i <= n; ++i) cin >> w[i];

  int l = 1, r = 1000000000;
  while (l <= r) {
    int mid = (l + r) / 2;
    if (check(mid)) r = mid-1;
    else l = mid+1;
  }
  cout << l << endl;
  return 0;
}
```