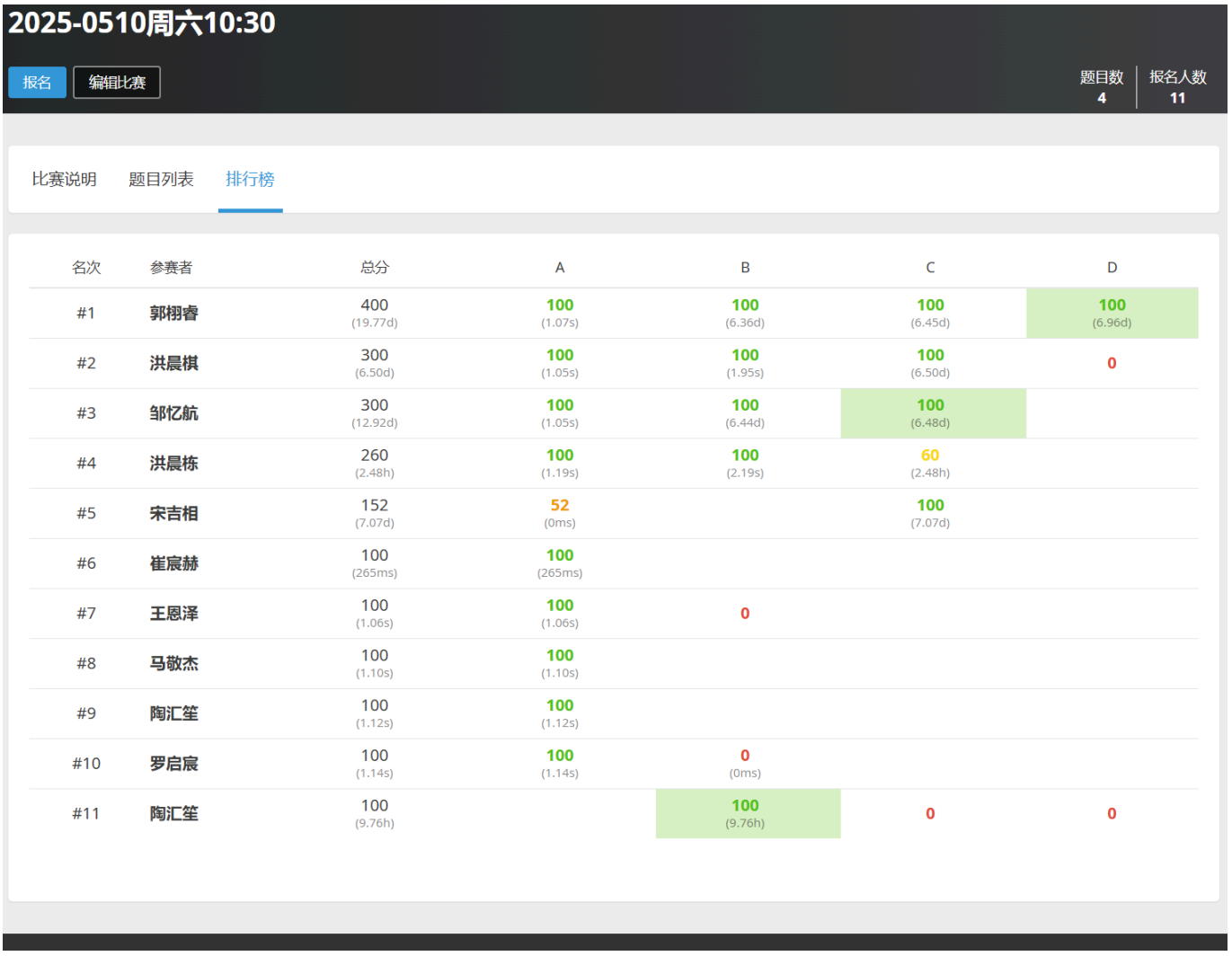
二分答案

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, 王恩泽、马敬杰 线上

作业检查

上周作业链接: https://www.luogu.com.cn/contest/245869



2025-0510周六10:30

报名 编辑比赛

题目数 4 | 报名人数 11

比赛说明 题目列表 排行榜

名次	参赛者	总分	A	B	C	D
#1	郭栩睿	400 (19.77d)	100 (1.07s)	100 (6.36d)	100 (6.45d)	100 (6.96d)
#2	洪晨棋	300 (6.50d)	100 (1.05s)	100 (1.95s)	100 (6.50d)	0
#3	邹忆航	300 (12.92d)	100 (1.05s)	100 (6.44d)	100 (6.48d)	
#4	洪晨栋	260 (2.48h)	100 (1.19s)	100 (2.19s)	60 (2.48h)	
#5	宋吉相	152 (7.07d)	52 (0ms)		100 (7.07d)	
#6	崔宸赫	100 (265ms)	100 (265ms)			
#7	王恩泽	100 (1.06s)	100 (1.06s)	0		
#8	马敬杰	100 (1.10s)	100 (1.10s)			
#9	陶汇笙	100 (1.12s)	100 (1.12s)			
#10	罗启宸	100 (1.14s)	100 (1.14s)	0 (0ms)		
#11	陶汇笙	100 (9.76h)		100 (9.76h)	0	0

作业

https://www.luogu.com.cn/contest/247000 (课上讲了 A ~ B 这些题, 课后作业是 C D 题)

课堂表现

今天讲了二分答案的知识, 同学们课上听讲都很认真, 课下也要好好复习一下, 会画 左0右1 和 左1右0 的图, 掌握二分的模板。

课堂内容

P1678 烦恼的高考志愿

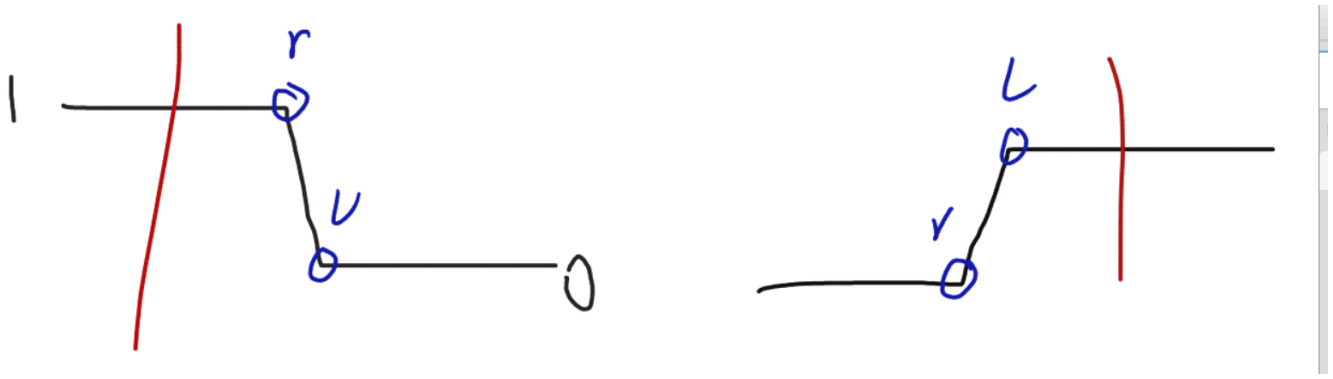
```cpp
#include <bits/stdc++.h>

using namespace std;

typedef long long LL;
const int maxn = 1e5 + 5;
int w[maxn];

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

  LL res = 0;
  for (int i = 1; i <= n; ++i) {
    int x; cin >> x;
    int p1 = lower_bound(w+1, w+m+1, x) - w;
    int p2 = p1-1;
    int minn = 1e9;
    if (p1 <= m) minn = min(minn, w[p1]-x);
    if (p2 >= 1) minn = min(minn, x-w[p2]);
    res += minn;
  }
  cout << res << endl;
  return 0;
}
```

P5250 【深基17.例5】木材仓库

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

using namespace std;

typedef long long LL;
const LL inf = 1e18;

int main()
{
    set<LL> s;
    s.insert(-inf), s.insert(inf);
    int n; cin >> n;
    while (n -- ) {
        int op; LL x; cin >> op >> x;
        if (op == 1) {
            if (s.count(x)) cout << "Already Exist" << endl;
            else s.insert(x);
        } else {
            if (s.size() == 2) {
                cout << "Empty" << endl;
```

```
                continue;
            }
            if (s.count(x)) {
                cout << x << endl; s.erase(x);
            } else {
                auto it = s.lower_bound(x);
                auto it2 = it; it2--;

                LL dx1 = x-*it2, dx2 = *it-x;
                if (dx1 <= dx2) {
                    cout << *it2 << endl; s.erase(*it2);
                } else {
                    cout << *it << endl; s.erase(*it);
                }
            }
        }
    }
    return 0;
}
```

左 1 右 0 和 左 0 右 1 的两种情况




```
左 1 右 0
while (l <= r) {
    int mid = (l + r) / 2;
    if (check(mid)) l = mid+1;
    else r = mid-1;
}
r 就是答案


左 0 右 1
while (l <= r) {
    int mid = (l + r) / 2;
    if (check(mid)) r = mid-1;
    else l = mid+1;
}
l 就是答案
```

B3627 立方根

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

using namespace std;

typedef long long LL;

int main()
{
  LL n; cin >> n;
  int l = 1, r = 100000;
  while (l <= r) {
    int mid = (l + r) / 2;
    if ((LL)mid*mid*mid <= n) l = mid+1;
    else r = mid-1;
  }
  cout << r << endl;
  return 0;
}
```

P2440 木材加工

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

using namespace std;

const int maxn = 1e5 + 5;
int w[maxn];
int n, k;

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

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

  int l = 1, r = 1e8 + 10;
  while (l <= r) {
    int mid = (l + r) / 2;
    if (check(mid)) l = mid+1;
    else r = mid-1;
```

```
    }
    cout << r << endl;
    return 0;
}
```