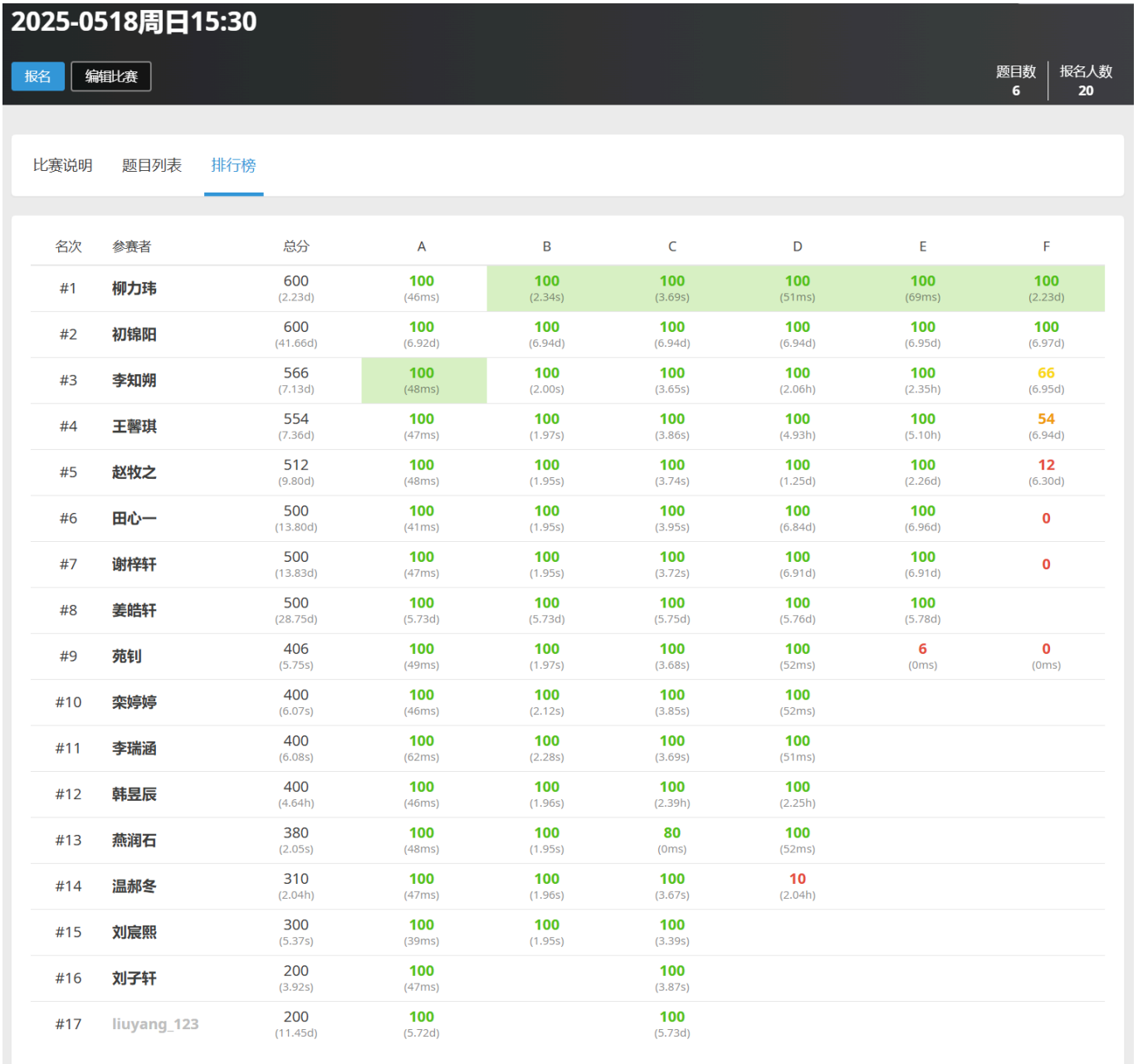
# set和map

## 人员

王馨琪、温郝冬、柳力玮、田心一、谢梓轩、李知朔、韩昱辰、李瑞涵、苑钊、赵牧之、刘宸熙、初锦阳、纪博涵、姜皓轩 到课, 刘子轩 线上

## 上周作业检查

上周作业链接: https://www.luogu.com.cn/contest/247008



2025-0518周日15:30

报名 编辑比赛

题目数 6 | 报名人数 20

比赛说明 题目列表 排行榜

| 名次 | 参赛者 | 总分 | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|---|
| #1 | 柳力玮 | 600 (2.23d) | 100 (46ms) | 100 (2.34s) | 100 (3.69s) | 100 (51ms) | 100 (69ms) | 100 (2.23d) |
| #2 | 初锦阳 | 600 (41.66d) | 100 (6.92d) | 100 (6.94d) | 100 (6.94d) | 100 (6.94d) | 100 (6.95d) | 100 (6.97d) |
| #3 | 李知朔 | 566 (7.13d) | 100 (48ms) | 100 (2.00s) | 100 (3.65s) | 100 (2.06h) | 100 (2.35h) | 66 (6.95d) |
| #4 | 王馨琪 | 554 (7.36d) | 100 (47ms) | 100 (1.97s) | 100 (3.86s) | 100 (4.93h) | 100 (5.10h) | 54 (6.94d) |
| #5 | 赵牧之 | 512 (9.80d) | 100 (48ms) | 100 (1.95s) | 100 (3.74s) | 100 (1.25d) | 100 (2.26d) | 12 (6.30d) |
| #6 | 田心一 | 500 (13.80d) | 100 (41ms) | 100 (1.95s) | 100 (3.95s) | 100 (6.84d) | 100 (6.96d) | 0 |
| #7 | 谢梓轩 | 500 (13.83d) | 100 (47ms) | 100 (1.95s) | 100 (3.72s) | 100 (6.91d) | 100 (6.91d) | 0 |
| #8 | 姜皓轩 | 500 (28.75d) | 100 (5.73d) | 100 (5.73d) | 100 (5.75d) | 100 (5.76d) | 100 (5.78d) | |
| #9 | 苑钊 | 406 (5.75s) | 100 (49ms) | 100 (1.97s) | 100 (3.68s) | 100 (52ms) | 6 (0ms) | 0 (0ms) |
| #10 | 栾婷婷 | 400 (6.07s) | 100 (46ms) | 100 (2.12s) | 100 (3.85s) | 100 (52ms) | | |
| #11 | 李瑞涵 | 400 (6.08s) | 100 (62ms) | 100 (2.28s) | 100 (3.69s) | 100 (51ms) | | |
| #12 | 韩昱辰 | 400 (4.64h) | 100 (46ms) | 100 (1.96s) | 100 (2.39h) | 100 (2.25h) | | |
| #13 | 燕润石 | 380 (2.05s) | 100 (48ms) | 100 (1.95s) | 80 (0ms) | 100 (52ms) | | |
| #14 | 温郝冬 | 310 (2.04h) | 100 (47ms) | 100 (1.96s) | 100 (3.67s) | 10 (2.04h) | | |
| #15 | 刘宸熙 | 300 (5.37s) | 100 (39ms) | 100 (1.95s) | 100 (3.39s) | | | |
| #16 | 刘子轩 | 200 (3.92s) | 100 (47ms) | | 100 (3.87s) | | | |
| #17 | liuyang_123 | 200 (11.45d) | 100 (5.72d) | | 100 (5.73d) | | | |

## 作业

https://www.luogu.com.cn/contest/248741 (课上讲了 A ~ E 题, 课后作业是 F 题)

## 课堂表现

今天课上讲了两个很重要的 STL 容器, 分别是 set 和 map, 同学们课上听讲基本都比较认真。

# 课堂内容

### U514680 expressway

差分维护每条高速公路需要走多少遍, 最后对每条高速公路进行考虑, 看两种买票的策略哪种情况花销更小。

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

using namespace std;

typedef long long LL;
const int maxn = 1e5 + 5;
int w[maxn], a[maxn], b[maxn], c[maxn];
int f[maxn], p[maxn];

void solve(int l, int r) {
  if (l > r) swap(l, r);
  f[l]++, f[r]--;
}

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

  for (int i = 2; i <= m; ++i) solve(w[i-1], w[i]);
  for (int i = 1; i <= n-1; ++i) p[i] = p[i-1] + f[i];

  LL res = 0;
  for (int i = 1; i <= n-1; ++i) {
    LL x1 = (LL)a[i]*p[i];
    LL x2 = c[i] + (LL)b[i]*p[i];
    res += min(x1, x2);
  }
  cout << res << endl;
  return 0;
}
```

### P1059 [NOIP 2006 普及组] 明明的随机数

```
#include <bits/stdc++.h>
using namespace std;

const int maxn = 1000 + 5;
int f[maxn];

int main() {
```

```
    int n; cin >> n;
    while (n -- ) {
        int x; cin >> x; f[x]++;
    }

    int cnt = 0;
    for (int i = 1; i <= 1000; i++) {
        if (f[i] != 0) {
            cnt++;
        }
    }
    cout << cnt << endl;

    for (int i = 1; i <= 1000; i++) {
        if (f[i] != 0) {
            cout << i << " ";
        }
    }
    return 0;
}
```

### U480360 明明的随机数2

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

using namespace std;

int main()
{
    set<int>s;
    int n; cin >> n;
    while (n -- ) {
        int x; cin >> x; s.insert(x);
    }
    cout << s.size() << endl;
    for (int i : s) cout << i << " ";
  return 0;
}
```

### U480367 A-B数对(简易版)

```
#include <bits/stdc++.h>
using namespace std;

const int N = 2e5+5, M = 1e6+5;
int w[N], f[M];

int main() {
```

```
    int n, C; cin >> n >> C;
    for (int i = 1; i <= n; ++i) {
        cin >> w[i];
        f[w[i]]++;
    }

    long long res = 0;
    for (int i = 1; i <= n; i++) {
        int A = w[i];
        int B = A - C;
        if (B >= 0) res += f[B];
    }

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

**P1102 A-B 数对**

```
#include <bits/stdc++.h>
using namespace std;

const int N = 2e5+5;
int w[N];
map<int,int> f;

int main() {
    int n, C; cin >> n >> C;
    for (int i = 1; i <= n; ++i) {
        cin >> w[i];
        f[w[i]]++;
    }

    long long res = 0;
    for (int i = 1; i <= n; i++) {
        int A = w[i];
        int B = A - C;
        if (B >= 0) res += f[B];
    }

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