二分答案

人员

程梓豪、隋钰涵、赵熙羽、高健桓、杨瑾硕、董浩桢、牛同泽、秦显森、郭骐嘉、夏志赫、刘闯速、武敬哲、牟茗、葛真然 到课, 谢亚锴 线上

上周作业检查

https://www.luogu.com.cn/contest/235008

2025-0309周日10:30

报名　编辑比赛

题目数 **5**　报名人数 **14**

比赛说明　题目列表　排行榜

名次	参赛者	总分	A	B	C	D	E
#1	武敬哲	500 (3.67d)	100 (25.83min)	100 (59.32min)	100 (2.08h)	100 (2.21h)	100 (3.43d)
#2	赵熙羽	500 (6.63d)	100 (28.33min)	100 (59.50min)	100 (1.78h)	100 (2.04h)	100 (6.41d)
#3	郭骐嘉	400 (4.79h)	100 (16.18min)	100 (53.07min)	100 (1.70h)	100 (1.93h)	
#4	谢亚锴	400 (5.23h)	100 (24.00min)	100 (1.01h)	100 (1.74h)	100 (2.08h)	
#5	高健桓	400 (5.37h)	100 (24.58min)	100 (1.10h)	100 (1.80h)	100 (2.06h)	
#6	程梓豪	400 (6.71h)	100 (50.02min)	100 (1.16h)	100 (2.46h)	100 (2.26h)	
#7	秦显森	300 (2.94h)	100 (26.92min)	100 (50.90min)	100 (1.64h)		
#8	杨谨硕	300 (4.43h)	100 (30.47min)		100 (1.62h)	100 (2.30h)	
#9	夏志赫	300 (5.37h)	100 (37.07min)		100 (2.31h)	100 (2.44h)	
#10	隋钰涵	200 (1.46h)	100 (31.07min)	100 (56.77min)			
#11	董浩桢	200 (6.96d)	100 (28.87min)		100 (6.94d)		
#12	刘闯速	103 (2.19h)	100 (1.17h)	3 (1.01h)			
#13	牛同泽	100 (30.32min)	100 (30.32min)				

作业

https://www.luogu.com.cn/contest/236357 (课上讲了 A~D 题, 课后作业是 E 题)

课堂表现

今天讲了二分答案的知识, 大家课下要好好复习一下, 会画 左0右1 和 左1右0 的图, 掌握二分的模板。

课堂内容

AT_abc217_d [ABC217D] Cutting Woods
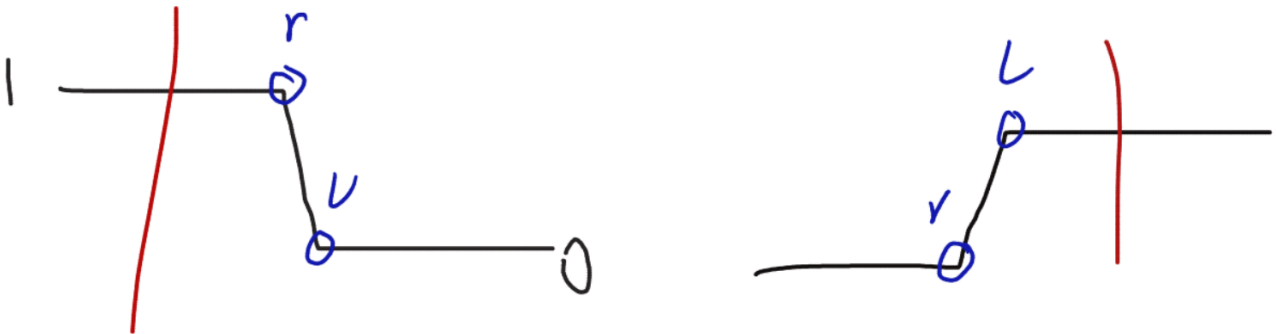
```cpp
#include <bits/stdc++.h>

using namespace std;

int main()
{
  int L, T; cin >> L >> T;
  set<int> s; s.insert(0), s.insert(L);

  while (T -- ) {
    int op, x; cin >> op >> x;
    if (op == 1) s.insert(x);
    else {
      auto it = s.upper_bound(x);
      auto it2 = it; it2--;
      cout << *it-*it2 << endl;
    }
  }
  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
```

P2440 木材加工

```cpp
#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;
}
```

P8800 [蓝桥杯 2022 国 B] 卡牌

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

using namespace std;

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

```cpp
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;
}
```

P8647 [蓝桥杯 2017 省 AB] 分巧克力

```cpp
#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()
{
```

```cpp
  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;
}
```

P1182 数列分段 Section II

```cpp
#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;
}
```