综合混练

人员

赵广宇、韩鸿钜、许岩、方冠霖、金一航、曹承贤、陈瀚霄、黄诗琦、王彦臻、卢炫佑、付丙霖 到课, 刘智予、李政毅、张皓宁 线上

上周作业检查

上周作业链接: https://vjudge.net/contest/707147

Begin: 2025-04-05 08:30 CST

☆ 2025-0405 ~ 0406 五队上课(综合练习)

End: 2025-08-08 08:30 CST

Elapsed: 7:09:48:07 Running **Remaining:** 117:14:11:52

Overview Problem Status Rank (7:09:48:08) Discuss Setting Clone Update Delete

Rank	Team	Score	Penalty	A 19 / 32	B 13 / 29	C 6 / 9	D 5 / 8
1	☆ ikunTLE (方冠霖)	4	4708	10:15:47	10:21:57 (-1)	**1:03:43:25**	**1:05:27:27 (-1)**
2	☆ misaka16384 (黄诗琦)	4	17202	7:12:46	3:12:42:56 (-2)	3:12:55:42	4:13:10:52
3	☆ qp_an (qp_an(赵广宇))	3	11312	1:12:54	13:03:16	7:06:16:26	
4	☆ dana230513 (金一航)	3	11467	8:03:21 (-1)	8:53:57		7:05:50:32
5	☆ ccx123bc (曹承贤)	3	11469	8:13:01 (-1)	8:45:16	7:05:50:53	
6	☆ two_tiger (卢炫佑)	3	17898	8:42:05 (-1)	6:11:53:25		5:13:03:26 (-1)
7	☆ sty0948 (隋...	3	19089	0:48:12		6:14:24:14	6:14:36:58 (-1)
8	☆ niuxiaochen (牛晓晨)	3	19717	0:52:59 (-2)	6:13:03:52	7:01:40:41 (-1)	
9	☆ zhn123bc	2	1029	7:35:48 (-1)	**8:33:45 (-2)**	(-2)	
10	☆ longlong_int (刘锦轩)	2	2479	1:37:54 (-2)	1:12:01:29 (-9)		
11	☆ lxr123bc (刘新睿)	2	9594	1:37:13 (-2)	6:13:36:55		
12	☆ fjj123bc (范家郡)	2	9653	1:18:35	6:15:15:14 (-1)		
13	☆ Hanhj (韩鸿钜)	2	10941	8:07:32 (-1)	7:05:54:20		
14	☆ FeatherCrow (许岩)	2	11012	7:51:56	7:07:40:35		
15	★ aiyishengaiyishi (王...	**1**	**47**	**0:47:23**			
16	☆ lzy1031 (李政毅)	1	518	8:38:04			
17	☆ dldltangmen (韩承煊)	1	1640	1:03:20:44			
18	☆ WangYanzhen (王彦臻)	1	10395	7:04:55:30 (-1)	(-1)		
19	☆ fbl123bc	1	10444	7:05:44:04 (-1)			

作业

https://vjudge.net/contest/708790 (课上讲了 A ~ C 这些题, 课后作业是 D 题)

课堂表现

今天课上题目相对复杂一点, 大部分同学课上只做了一个题, 剩下课上没做完的题课后一定要记得补。

这节课曹承贤同学课上做题表现比较好, 提出表扬！！

课堂内容

AT_abc203_d [ABC203D] Pond

二分 + 二维前缀和check

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

using namespace std;

const int maxn = 800 + 5;
int w[maxn][maxn], f[maxn][maxn];

int get_sum(int x1, int y1, int x2, int y2) {
  return f[x2][y2] - f[x1-1][y2] - f[x2][y1-1] + f[x1-1][y1-1];
}

bool check(int n, int k, int mid) {
  memset(f, 0, sizeof(f));
  for (int i = 1; i <= n; ++i) {
    for (int j = 1; j <= n; ++j) {
      f[i][j] = (w[i][j]<=mid ? 1 : 0);
      f[i][j] += f[i-1][j] + f[i][j-1] - f[i-1][j-1];
      if (i>=k && j>=k && get_sum(i-k+1, j-k+1, i, j)>=(k*k+1)/2) return true;
    }
  }
  return false;
}

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

  int l = 0, r = 1e9;
  while (l <= r) {
    int mid = (l + r) / 2;
    if (check(n, k, mid)) r = mid-1;
    else l = mid+1;
  }
```

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

AT_abc201_e [ABC201E] Xor Distances

针对 60 个二进制位的每一位进行考虑即可

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

using namespace std;

typedef long long LL;
const int maxn = 2e5 + 5;
const int mod = 1e9 + 7;
struct node {
  int to; LL value;
};
vector<node> vec[maxn];
int sum0, sum1;

void dfs(int u, int fa, int k, int val) {
  sum0 += (val==0), sum1 += (val==1);
  for (node it : vec[u]) {
    if (it.to == fa) continue;
    int c = (it.value>>k)&1;
    dfs(it.to, u, k, val^c);
  }
}

int main()
{
  int n; cin >> n;
  for (int i = 1; i <= n-1; ++i) {
    int u, v; LL w; cin >> u >> v >> w;
    vec[u].push_back({v,w}), vec[v].push_back({u,w});
  }

  int res = 0;
  for (int i = 60; i >= 0; --i) {
    sum0 = sum1 = 0;
    dfs(1, -1, i, 0);
    int x = (LL)sum0*sum1%mod, y = (1LL<<i)%mod;
    res = (res + (LL)x*y%mod) % mod;
  }
  cout << res << endl;
  return 0;
}
```

CF1741E Sending a Sequence Over the Network

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

using namespace std;

const int maxn = 2e5 + 5;
int w[maxn];
bool f[maxn];

void solve() {
  int n; cin >> n;
  for (int i = 0; i <= n+2; ++i) f[i] = false;

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

  f[0] = true;
  for (int i = 1; i <= n; ++i) {
    int l = i - w[i], r = i + w[i];
    if (l-1 >= 0) f[i] |= f[l-1];
    if (r <= n) f[r] |= f[i-1];
  }

//  cout << "----------------------- ";
  cout << (f[n] ? "YES" : "NO") << endl;
}

int main()
{
  int T; cin >> T;
  while (T -- ) solve();
  return 0;
}
```

CF1288D Minimax Problem

二分 + 状压

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

using namespace std;

const int N = 3e5 + 5, M = 9;
int w[N][M], f[1<<M];
int n, m;
int resl = 1, resr = 2;

bool check(int mid) {
  memset(f, 0, sizeof(f));
  for (int i = 1; i <= n; ++i) {
    int res = 0;
    for (int j = 0; j < m; ++j) {
```

```
      int x = (w[i][j]>=mid);
      res += (x<<j);
    }
    f[res] = i;
  }

  for (int i = 0; i < (1<<m); ++i) {
    for (int j = 0; j < (1<<m); ++j) {
      if (f[i] && f[j] && (i|j)==(1<<m)-1) {
        resl = f[i], resr = f[j];
        return true;
      }
    }
  }
  return false;
}

int main()
{
  cin >> n >> m;
  for (int i = 1; i <= n; ++i) {
    for (int j = 0; j < m; ++j) cin >> w[i][j];
  }

  int l = 0, r = 1e9+10;
  while (l <= r) {
    int mid = (l + r) / 2;
    if (check(mid)) l = mid+1;
    else r = mid-1;
  }
  cout << resl << " " << resr << endl;
  return 0;
}
```

CF577B Modulo Sum

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

using namespace std;

const int N = 1e6 + 5, M = 1e3 + 5;
int w[N];
bool p[M], h[M];

int main()
{
  int n, m; cin >> n >> m;
  for (int i = 1; i <= n; ++i) cin >> w[i];
  if (n >= m) { cout << "YES" << endl; return 0; }

  for (int i = 1; i <= n; ++i) {
```

```
      int x = w[i] % m;
      h[x] = true;
      for (int j = 0; j < m; ++j) {
        if (p[j]) h[(x+j)%m] = true;
      }
      memcpy(p, h, sizeof(p));
    }

    cout << (h[0] ? "YES" : "NO") << endl;
    return 0;
  }
```