army

```cpp
#include <bits/stdc++.h>
using namespace std;
const int N = 1e3 + 10;
list <int> a[N];
int n,q;
signed main() {
    ios::sync_with_stdio(0);
    cin.tie(0);cout.tie(0);
    cin >> n >> q;
    for (int i = 1;i <= n;++i) {
        int cnt;cin >> cnt;
        while (cnt -- )
        {
            int x;cin >> x;
            a[i].push_back(x);
        }
    }
    while (q--) {
        char opt;cin >> opt;
        int x,y;
        if (opt == 'U') {
            cin >> x >> y;
            for (auto p : a[y]) a[x].push_back(p);
            a[y].clear();
        }
        if (opt == 'I') {
            cin >> x >> y;
            a[x].push_front(y);
        }
        if (opt == 'D') {
            cin >> x >> y;
            a[x].remove(y);
        }
        if (opt == 'Q') {
            cin >> x;
            if (a[x].empty()) cout << -1;
            for (auto p : a[x]) cout << p << ' ';
            cout << "\n";
        }
    }
}
```


princess

```cpp
/*
Am I allowed to cry?
*/
#include <bits/stdc++.h>
using namespace std;
#define ll long long
#define FO(x) {freopen(#x".in","r",stdin);freopen(#x".out","w",stdout);}
#define pii pair<int,int>
#define pll pair<ll,ll>
#define mp make_pair
const int N = 1e3 + 10;
const int dx[4] = {0,0,1,-1};
const int dy[4] = {1,-1,0,0};
char c[N][N];
int n ,m,dis[N][N];
signed main() {
    ios::sync_with_stdio(false);
    cin.tie(0);cout.tie(0);
    cin >> n >> m;
    pii s = mp(0,0),t = mp(0,0);
    for (int i = 1; i <= n; i++) {
        for (int j = 1; j <= m; j++) {
            cin >> c[i][j];
            if (c[i][j] == 'r') s = mp(i,j);
            if (c[i][j] == 'a') t = mp(i,j);
        }
    }
    queue <pii> q;
    q.push(s);
    memset(dis,0x3f,sizeof(dis));
    dis[s.first][s.second] = 0;
    while (!q.empty()) {
        pii p = q.front();q.pop();
        int x = p.first,y = p.second;
        for (int i = 0;i < 4;++i) {
            int nx = x + dx[i],ny = y + dy[i];
            if (nx < 1 || nx > n || ny < 1 || ny > m || c[nx][ny] == '#') continue;
            int now = 0;
            if (c[nx][ny] == 'x') now = 2;
            else now = 1;
            if (dis[nx][ny] > dis[x][y] + now) {
                dis[nx][ny] = dis[x][y] + now;
                q.push(mp(nx,ny));
            }
        }
    }
```

```
    if (dis[t.first][t.second] == 0x3f3f3f3f) cout << -1 << endl;
    else cout << dis[t.first][t.second] << endl;
    return 0;
}
```

trade

```
/*
Am I allowed to cry?
*/
#include <bits/stdc++.h>
using namespace std;
#define ll long long
#define FO(x)
{freopen(#x".in","r",stdin);freopen(#x".out","w",stdout);}
#define pii pair<int,int>
#define pll pair<ll,ll>
#define mp make_pair

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(0);cout.tie(0);
    int n;
    cin >> n;
    queue <int> q;
    vector <int> ans1,ans2;

    for (int i = 1; i <= n; i++) {
        q.push(i);
    }
    while (q.size() > 1) {
            ans1.push_back(q.front());q.pop();
            q.push(q.front());q.pop();

    }
    for (auto x : ans1) cout << x << " ";
    if (q.size()) cout << "\n" << q.front() << "\n";
    return 0;
}
```

train

```cpp
#include <bits/stdc++.h>
using namespace std;
const int N = 1e3 + 10;
int a[N],b[N];
bool ins[N];
int n,q;
signed main() {
    ios::sync_with_stdio(0);
    cin.tie(0);cout.tie(0);
    cin >> n;
    for (int i = 1;i <= n;++i) {
        char c;cin >> c;
        a[i] = c - '0';
    }
    for (int i = 1;i <= n;++i) {
        char c;cin >> c;
        b[i] = c - '0';
    }
    vector <int> ans;
    int pos1 = 1;
    ans.push_back(1);
    stack<int>st;st.push(a[1]);
    int pos2 = 1;
    while (pos1 <= n && pos2 <= n) {
        if (!st.empty() && st.top() == b[pos2]) {
            st.pop();
            ++pos2;
            ans.push_back(0);
        } else {
            st.push(a[++pos1]);
            ans.push_back(1);
        }
    }
//  cerr << pos1 << "  "  << pos2 << "\n";
    if (pos2 == n + 1) {
        cout << "Yes\n";
        for (auto x : ans) cout << (x ? "in" : "out") << "\n";
    } else {
        cout << "No\n";
    }
}
```

value

```cpp
/*
Am I allowed to cry?
*/
#include <bits/stdc++.h>
using namespace std;
#define ll long long
#define FO(x)
{freopen(#x".in","r",stdin);freopen(#x".out","w",stdout);}
#define pii pair<int,int>
#define pll pair<ll,ll>
#define mp make_pair
const int N = 1e5 + 10;
ll a[N],st[N],top,n,L[N],R[N],sum[N];

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(0);cout.tie(0);
    cin >> n;
    for (int i = 1;i <= n;++i) cin >> a[i];
    for (int i = 1;i <= n;++i) {
        while (top && a[st[top]] >= a[i]) --top;
        L[i] = st[top] + 1;
        st[++top] = i;
    }
    top = 0;
    st[top] = n + 1;
    for (int i = n;i >= 1;--i) {
        while (top && a[st[top]] >= a[i]) --top;
        R[i] = st[top] - 1;
        st[++top] = i;
    }
    for (int i = 1;i <= n;++i) sum[i] = sum[i - 1] + a[i];
    ll ans = 0;
    for (int i = 1;i <= n;++i) {
        cerr << L[i] << ' ' << R[i] << '\n';
        ll val = (sum[R[i]] - sum[L[i] - 1]) * a[i];
        ans = max(ans,val);
    }
    cout << ans << '\n';
    return 0;
}
```

魔音吉他

```cpp
/*
Am I allowed to cry?
*/
#include <bits/stdc++.h>
using namespace std;
#define ll long long
#define FO(x) {freopen(#x".in","r",stdin);freopen(#x".out","w",stdout);}
#define pii pair<int,int>
#define pll pair<ll,ll>
#define mp make_pair
#define int ll
const int N = 2e5+5;
int n,a[N],q,s[N],m;
set <int> S;

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(0);cout.tie(0);
    cin >> m;
    vector <int> a,v;
    for (int i = 1;i <= m;++i) {
        int x;cin >> x;
        if (!S.count(x)) a.push_back(x);
        S.insert(x);
    }
    sort(a.begin(),a.end());
    for (int i = 0;i + 1 < a.size();++i) {
        v.push_back(a[i+1] - a[i]);
    }
    sort(v.begin(),v.end());
    vector <int> s(v.size() + 1,0);
    for (int i = 0;i < v.size();++i) {
        s[i+1] = s[i] + v[i];
        // cerr << s[i+1] << " ";
    }
    cin >> q;
    while (q--) {
        int l,r;cin >> l >> r;
        int len = r - l + 1;
        int pos = distance(v.begin(),lower_bound(v.begin(),v.end(),len));
        cout << s[pos] + (v.size() - pos + 1) * len<< " ";
    }
    return 0;
}
```

just sort

```cpp
/*
Am I allowed to cry?
*/
#include <bits/stdc++.h>
using namespace std;
#define ll long long
#define FO(x)
{freopen(#x".in","r",stdin);freopen(#x".out","w",stdout);}
#define pii pair<int,int>
#define pll pair<ll,ll>
#define mp make_pair
const int N = 2e5+5;
int a[N],b[N],n,m;
signed main() {
    ios::sync_with_stdio(false);
    cin.tie(0);cout.tie(0);
    cin >> n >> m;
    for (int i = 1;i <= n;++i) cin >> a[i];
    for (int i = 1;i <= m;++i) cin >> b[i];
    vector <int> vec;
    for (int i = 1;i <= n;++i) {
        if (a[i]) vec.push_back(a[i]);
    }
    sort(vec.begin(),vec.end());
    int pos = 0;
    for (int i = 1;i <= n;++i) {
        if (a[i]) a[i] = vec[pos++];
    }
    sort(b+1,b+m+1);
    int p = 1;
    for (int i = 1;i <= n;++i) {
        if (!a[i]) a[i] = b[p++];
    }
    bool flag = 0;
    for (int i = 1;i < n;++i) {
        if (a[i] > a[i+1]) flag = 1;
    }
    if (flag) {
        cout << -1 << "\n";
        return 0;
    }
    for (int i = 1;i <= n;++i) cout << a[i] << " ";
    return 0;
}
```

鼹鼠报数

```cpp
/*
Am I allowed to cry?
*/
#include <bits/stdc++.h>
using namespace std;
#define ll long long
#define FO(x)
{freopen(#x".in","r",stdin);freopen(#x".out","w",stdout);}
#define pii pair<int,int>
#define pll pair<ll,ll>
#define mp make_pair
const int N = 1e5 + 10;
vector<int> g;
int n;
void solve(const vector <int> &g) {
    vector <int> L,R;
    int root = g.back();
    cout << root;
    int p = 0;
    for (int i = 0;i + 1< g.size();++i) {
        if (g[i] < root) L.push_back(g[i]);
        else R.push_back(g[i]);
    }
    if (L.size()) {
        cout << "<";
        solve(L);
        cout << ">";
    }
    if (R.size()) {
        cout << "<";
        solve(R);
        cout << ">";
    }
}
signed main() {
    ios::sync_with_stdio(false);
    cin.tie(0);cout.tie(0);
    cin >> n;
    for (int i = 1;i <= n;++i) {
        int x;cin >> x;g.push_back(x);
    }
    solve(g);
    return 0;
}
```


harder

```cpp
/*
Am I allowed to cry?
*/
#include <bits/stdc++.h>
using namespace std;
#define ll long long
#define FO(x) {freopen(#x".in","r",stdin);freopen(#x".out","w",stdout);}
#define pii pair<int,int>
#define pll pair<ll,ll>
#define mp make_pair
const int N = 2e5+5;
int dis[N],n,m;
vector <pii> G[N];
bool vis[N];
struct node {
    int pos,dis;
    friend bool operator < (const node &a,const node &b) {
        return a.dis > b.dis;
    }
};
bool Dijkstra(int s,int t) {
    memset(dis,0x3f,sizeof(dis));
    memset(vis,0,sizeof(vis));
    dis[s] = 0;
    priority_queue<node> q;
    q.push({s,0});
    while (!q.empty()) {
        node p = q.top();q.pop();
        int u = p.pos;
        if (vis[u]) continue;
        vis[u] = 1;
        for (auto e : G[u]) {
            int v = e.first,w = e.second;
            if (dis[v] > dis[u] + w) {
                dis[v] = dis[u] + w;
                q.push({v,dis[v]});
            }
        }
    }
    return dis[t] != 0x3f3f3f3f;
}
int f[N];int s,t;
int dfs(int x) {
    if (x == t) return 1;
    cerr << "now :" << x << "\n";
    if (f[x] != -1) return f[x];
    int ans = 0;
```

```
    for (auto p : G[x]) {
        cerr << "to :" << p.first << " dis:" << dis[p.first] <<
"\n";
        int v = p.first,w = p.second;
        if (dis[v] < dis[x]) {
            ans += dfs(v);
        }
    }

    return f[x] = ans;
}
signed main() {
    ios::sync_with_stdio(false);
    cin.tie(0);cout.tie(0);
    cin >> n >> m;
    for (int i = 1;i <= m;i++) {
        int u,v,w;cin >> u >> v >> w;
        G[u].push_back({v,w});
        G[v].push_back({u,w});
    }
    cin >> s >> t;
    if (Dijkstra(t,s) == 0) {
        cout << -1 << endl;
    } else {
        memset(f,-1,sizeof(f));
        for (int i = 1;i <= n;i++) cerr << "dis[" << i << "]=" <<
dis[i] << "\n";
        cout << dfs(s) << endl;
    }
    return 0;
}
```

最小生成树

```cpp
/*
Am I allowed to cry?
*/
#include <bits/stdc++.h>
using namespace std;
#define ll long long
#define FO(x) {freopen(#x".in","r",stdin);freopen(#x".out","w",stdout);}
#define pii pair<int,int>
#define pll pair<ll,ll>
#define mp make_pair
const int N = 1e5 + 10;
int n,vis[N];
double dis (pll a,pll b) {
    return sqrt((a.first - b.first) * (a.first - b.first) + (a.second - b.second) * (a.second - b.second));
}
double minn[N];
pll p[N];
signed main() {
    ios::sync_with_stdio(false);
    cin.tie(0);cout.tie(0);
    cin >> n;
    for (int i = 1;i <= n;++i) {
        cin >> p[i].first >> p[i].second;
        minn[i] = 1e18;
    }

    minn[1] = 0;minn[0] = 1e18;
    double ans = 0;
    for (int i = 1;i <= n;++i) {
        int idx = 0;
        for (int j = 1;j <= n;++j) {
            if (!vis[j] && minn[j] < minn[idx]) idx = j;
        }
        ans += minn[idx];
        vis[idx] = 1;
        for (int j = 1;j <= n;++j) {
            if (!vis[j]) {
                double d = dis(p[idx],p[j]);
                if (d < minn[j]) minn[j] = d;
            }
        }
    }
    cout << fixed << setprecision(2) << ans << endl;
    return 0;
}
```