

Олимпиада СПбГУ по информатике 2022/23 учебного года

A	B	C	D	E	F	Sum
100	100	100	60	52	10	422

Task A ()

```
#include <iostream>
#include <vector>
#include <iomanip>
#include <algorithm>
#include <cassert>
#include <fstream>
#include <set>
#include <map>
#include <unordered_set>
#include <unordered_map>
#include <string>
#include <queue>
#include <cmath>
#include <climits>
#include <bitset>
#include <random>
#include <deque>
#include <complex>
#include <ctime>
#include <chrono>
#include <cstdio>
#include <cstring>

#define X first
#define Y second
#define pb push_back
#define eb emplace_back
#define vll vector<long long>
#define vp11 vector<pair<long long, long long>>
#define vvi vector<vector<long long>>
#define dbg(x) cerr << #x << " :_" << x << "\n";
#define red(_, a) for (auto &_ : a)
#define endln cout << "\n"
#define rep(i, n) for (long long i = 0; i < n; ++i)
#define per(i, n) for (long long i = n - 1; i >= 0; i--)
#define frep(i, a, n) for (long long i = a; i < n; ++i)
#define fper(i, a, n) for (long long i = n - 1; i >= a; i--)
#define pii pair<long long, long long>
#define pll pair<ll, ll>
#define pit pair<long long, pair<long long, long long>>
#define all(x) x.begin(), x.end()
const std::string INPUT_FILE = R"(C:\Users\gente\CLionProjects\coding\input.txt)";
const std::string OUTPUT_FILE = R"(C:\Users\gente\CLionProjects\coding\output.txt)";

template<class T>
bool ckmin(T &a, const T &b) {
    return b < a ? a = b, 1 : 0;
}

template<class T>
bool ckmax(T &a, const T &b) {
    return b > a ? a = b, 1 : 0;
}

template<class T>
std::ostream &operator<<(std::ostream &out, std::vector<T> v) {
```

```

    for (auto &_ : v) out << _ << " ";
    out << "\n";
    return out;
}
// #include <ext/pb_ds/detail/standard_policies.hpp>
// #include <ext/pb_ds/assoc_container.hpp>
// using namespace __gnu_pbds;
// typedef tree<long long, null_type, less<long long>, rb_tree_tag,
//     tree_order_statistics_node_update> ordered_set;
using namespace std;
#define int long long

signed main() {
#ifdef LOCAL
    freopen(INPUT_FILE.c_str(), "rt", stdin);
    freopen(OUTPUT_FILE.c_str(), "wt", stdout);
#endif
    ios_base::sync_with_stdio(false);
    cin.tie(nullptr);
    int n = 6;
    vector<int> st;
    for (int i = 0; i < n; ++i) {
        vector<int> th;
        int p; cin >> p; p--;
        for (int j = 0; j < p; ++j) {
            th.push_back(st[j]);
        }
        th.push_back(i + 1);
        for (int j = p; j < (int)st.size(); ++j) {
            th.push_back(st[j]);
        }
        swap(st, th);
    }
    vector<int> ans(n);
    for (int i = 0; i < n; ++i) {
        ans[st[i] - 1] = i + 1;
    }
    for (int &x: ans) cout << x << " ";
    cout << "\n";
}

```

Task B ()

```
#include <iostream>
#include <vector>
#include <iomanip>
#include <algorithm>
#include <cassert>
#include <fstream>
#include <set>
#include <map>
#include <unordered_set>
#include <unordered_map>
#include <string>
#include <queue>
#include <cmath>
#include <climits>
#include <bitset>
#include <random>
#include <deque>
#include <complex>
#include <ctime>
#include <chrono>
#include <cstdio>
#include <cstring>

#define X first
#define Y second
#define pb push_back
#define eb emplace_back
#define vll vector<long long>
#define vpll vector<pair<long long, long long>>
#define vvi vector<vector<long long>>
#define dbg(x) cerr << #x << ":_ " << x << "\n";
#define red(_, a) for (auto &_: a)
#define endln cout << "\n"
#define rep(i, n) for (long long i = 0; i < n; ++i)
#define per(i, n) for (long long i = n - 1; i >= 0; i--)
#define frep(i, a, n) for (long long i = a; i < n; ++i)
#define fper(i, a, n) for (long long i = n - 1; i >= a; i--)
#define pii pair<long long, long long>
#define pll pair<ll, ll>
#define pit pair<long long, pair<long long, long long>>
#define all(x) x.begin(), x.end()
const std::string INPUT_FILE = R"(C:\Users\gente\CLionProjects\coding\input.txt)";
const std::string OUTPUT_FILE = R"(C:\Users\gente\CLionProjects\coding\output.txt)";

template<class T>
bool ckmin(T &a, const T &b) {
    return b < a ? a = b, 1 : 0;
}

template<class T>
bool ckmax(T &a, const T &b) {
    return b > a ? a = b, 1 : 0;
}

template<class T>
std::ostream &operator<<(std::ostream &out, std::vector<T> v) {
    for (auto &_: v) out << _ << "_ ";
    out << "\n";
    return out;
}

// #include <ext/pb_ds/detail/standard_policies.hpp>
// #include <ext/pb_ds/assoc_container.hpp>
// using namespace __gnu_pbds;
// typedef tree<long long, null_type, less<long long>, rb_tree_tag,
//     tree_order_statistics_node_update> ordered_set;
using namespace std;
#define int long long

void sf(){
    int n; cin >> n;
    int sum = 0;
    for (int i = 0; i < n; ++i) {
```

```

        int val; cin >> val;
        sum += val;
    }
    int ans = 1e8;
    ans += sum * 1000;
    cout << ans << "\n";
}

void st(){
    int n; cin >> n;
    int sum = 0;
    for (int i = 0; i < n; ++i) {
        int val; cin >> val;
        int aq = val % 1000;
        sum += aq;
        if (i == 0) {
            int z = val % 1000000000;
            z /= 1000;
            sum += z;
        }
    }
    cout << sum << "\n";
}

signed main() {
#ifdef LOCAL
    freopen(INPUT_FILE.c_str(), "rt", stdin);
    freopen(OUTPUT_FILE.c_str(), "wt", stdout);
#endif
    ios_base::sync_with_stdio(false);
    cin.tie(nullptr);
    string op; cin >> op;
    if (op == "first") {
        sf();
        return 0;
    } else {
        st();
        return 0;
    }
}

```

Task C ()

```
#include <iostream>
#include <vector>
#include <iomanip>
#include <algorithm>
#include <cassert>
#include <fstream>
#include <set>
#include <map>
#include <unordered_set>
#include <unordered_map>
#include <string>
#include <queue>
#include <cmath>
#include <climits>
#include <bitset>
#include <random>
#include <deque>
#include <complex>
#include <ctime>
#include <chrono>
#include <cstdio>
#include <cstring>

#define X first
#define Y second
#define pb push_back
#define eb emplace_back
#define vll vector<long long>
#define vpll vector<pair<long long, long long>>
#define vvi vector<vector<long long>>
#define dbg(x) cerr << #x << ":_" << x << "\n";
#define red(_, a) for (auto &_: a)
#define endln cout << "\n"
#define rep(i, n) for (long long i = 0; i < n; ++i)
#define per(i, n) for (long long i = n - 1; i >= 0; i--)
#define frep(i, a, n) for (long long i = a; i < n; ++i)
#define fper(i, a, n) for (long long i = n - 1; i >= a; i--)
#define pii pair<long long, long long>
#define pll pair<ll, ll>
#define pit pair<long long, pair<long long, long long>>
#define all(x) x.begin(), x.end()
const std::string INPUT_FILE = R"(C:\Users\gente\CLionProjects\coding\input.txt)";
const std::string OUTPUT_FILE = R"(C:\Users\gente\CLionProjects\coding\output.txt)";

template<class T>
bool ckmin(T &a, const T &b) {
    return b < a ? a = b, 1 : 0;
}

template<class T>
bool ckmax(T &a, const T &b) {
    return b > a ? a = b, 1 : 0;
}

template<class T>
std::ostream &operator<<(std::ostream &out, std::vector<T> v) {
    for (auto &_: v) out << _ << "_";
    out << "\n";
    return out;
}

// #include <ext/pb_ds/detail/standard_policies.hpp>
// #include <ext/pb_ds/assoc_container.hpp>
// using namespace __gnu_pbds;
// typedef tree<long long, null_type, less<long long>, rb_tree_tag,
//     tree_order_statistics_node_update> ordered_set;
using namespace std;
#define int long long

set<pair<int, int>> ans;

void insert(int a, int b) {
    if (a <= 0 || b <= 0) return;
```

```

    if (a > b) swap(a, b);
    ans.emplace(a, b);
}

int a1, b1, a2, b2, a3, b3;

void count(){
    if (a2 > a1 || a3 > a1 || b2 > b1 || b3 > b1) return;
    if (a2 >= a3 && b2 >= b3) {
        insert(a3, b3);
        if (a3 == a2 && b2 != b3) {
            insert(a3, b2 - b3);
        }
        if (a3 != a2 && b2 == b3) {
            insert(a3 - a2, b2);
        }
    }
    if (a2 + a3 <= a1 || b2 + b3 <= b1) {
        insert(a3, b3);
        insert(a2, b2);
        if (a2 + a3 <= a1) {
            if (b3 + b2 - 1 >= b1) {
                if (b1 == b2){
                    if (b2 == b3) insert(a1 - a2 - a3, b2);
                } else {
                    insert(a2, b1 - b2);
                }
                if (b1 != b3) insert(a3, b1 - b3);
            }
        }
        else {
            if (a1 == a2){
                if (a2 == a3) insert(b1 - b2 - b3, a2);
            } else {
                insert(b2, a1 - a2);
            }
            if (a1 != a3) insert(b3, a1 - a3);
        }
    }
    if (a2 + a3 == a1 && b2 == b3) {
        insert(b1 - b2, a1);
    }
    if (b2 + b3 == b1 && a2 == a3) {
        insert(a1 - a2, b1);
    }
}

vector<pair<int, int>> lt;

void solve(int i) {
    if (i == 3) {
        count();
        return;
    }
    vector<pair<int, int>> pr;
    for (int j = 0; j < (int)lt.size(); ++j) {
        if (i == 0){
            a1 = lt[j].first;
            b1 = lt[j].second;
            for (int q = j + 1; q < (int)lt.size(); ++q) {
                pr.push_back(lt[q]);
            }
            swap(pr, lt);
            solve(i + 1);
            if (a1 != b1) {
                swap(a1, b1);
                solve(i + 1);
            }
            swap(pr, lt);
            for (int q = j + 1; q < (int)lt.size(); ++q) {
                pr.pop_back();
            }
            pr.push_back(lt[j]);
        }
    }
}

```

```

    if (i == 1){
        a2 = lt[j].first;
        b2 = lt[j].second;
        for (int q = j + 1; q < (int)lt.size(); ++q) {
            pr.push_back(lt[q]);
        }
        swap(pr, lt);
        solve(i + 1);
        if (a2 != b2) {
            swap(a2, b2);
            solve(i + 1);
        }
        swap(pr, lt);
        for (int q = j + 1; q < (int)lt.size(); ++q) {
            pr.pop_back();
        }
        pr.push_back(lt[j]);
    }
    if (i == 2){
        a3 = lt[j].first;
        b3 = lt[j].second;
        for (int q = j + 1; q < (int)lt.size(); ++q) {
            pr.push_back(lt[q]);
        }
        swap(pr, lt);
        solve(i + 1);
        if (a3 != b3) {
            swap(a3, b3);
            solve(i + 1);
        }
        swap(pr, lt);
        for (int q = j + 1; q < (int)lt.size(); ++q) {
            pr.pop_back();
        }
        pr.push_back(lt[j]);
    }
}

}

signed main() {
#ifdef LOCAL
    freopen(INPUT_FILE.c_str(), "rt", stdin);
    freopen(OUTPUT_FILE.c_str(), "wt", stdout);
#endif
    ios_base::sync_with_stdio(false);
    cin.tie(nullptr);
    vector<pair<int, int>> r(3);
    for (int i = 0; i < 3; ++i) {
        cin >> r[i].first >> r[i].second;
        if (r[i].second < r[i].first) swap(r[i].second, r[i].first);
        insert(r[i].first, r[i].second);
    }
    for (int i = 0; i < 3; ++i) {
        for (int j = i + 1; j < 3; ++j) {
            if (r[i].first == r[j].first) {
                insert(r[i].first, abs(r[j].second - r[i].second));
            }
            if (r[i].second == r[j].second) {
                insert(r[i].second, abs(r[j].first - r[i].first));
            }
            swap(r[i].first, r[i].second);
            if (r[i].first == r[j].first) {
                insert(r[i].first, abs(r[j].second - r[i].second));
            }
            if (r[i].second == r[j].second) {
                insert(r[i].second, abs(r[j].first - r[i].first));
            }
        }
    }
    lt = r;
    solve(0);
    for (auto [x, y] : ans) {
        cout << x << " " << y << "\n";
    }
}

```

}

Task D ()

```
#include <iostream>
#include <vector>
#include <iomanip>
#include <algorithm>
#include <cassert>
#include <fstream>
#include <set>
#include <map>
#include <unordered_set>
#include <unordered_map>
#include <string>
#include <queue>
#include <cmath>
#include <climits>
#include <bitset>
#include <random>
#include <deque>
#include <complex>
#include <ctime>
#include <chrono>
#include <cstdio>
#include <cstring>

#define X first
#define Y second
#define pb push_back
#define eb emplace_back
#define vll vector<long long>
#define vpll vector<pair<long long, long long>>
#define vvi vector<vector<long long>>
#define dbg(x) cerr << #x << ": " << x << "\n";
#define red(_, a) for (auto &_: a)
#define endln cout << "\n"
#define rep(i, n) for (long long i = 0; i < n; ++i)
#define per(i, n) for (long long i = n - 1; i >= 0; i--)
#define frep(i, a, n) for (long long i = a; i < n; ++i)
#define fper(i, a, n) for (long long i = n - 1; i >= a; i--)
#define pii pair<long long, long long>
#define pll pair<ll, ll>
#define pit pair<long long, pair<long long, long long>>
#define all(x) x.begin(), x.end()
const std::string INPUT_FILE = R"(C:\Users\gente\CLionProjects\coding\input.txt)";
const std::string OUTPUT_FILE = R"(C:\Users\gente\CLionProjects\coding\output.txt)";

template<class T>
bool ckmin(T &a, const T &b) {
    return b < a ? a = b, 1 : 0;
}

template<class T>
bool ckmax(T &a, const T &b) {
    return b > a ? a = b, 1 : 0;
}

template<class T>
std::ostream &operator<<(std::ostream &out, std::vector<T> v) {
    for (auto &_: v) out << _ << " ";
    out << "\n";
    return out;
}

// #include <ext/pb_ds/detail/standard_policies.hpp>
// #include <ext/pb_ds/assoc_container.hpp>
// using namespace __gnu_pbds;
// typedef tree<long long, null_type, less<long long>, rb_tree_tag,
//     tree_order_statistics_node_update> ordered_set;
using namespace std;
#define int long long

int n;
vector<int> a;

void solve0(){
```

```

    cout << "1_" << a[0] << "\n";
    cout.flush();
    int i, val; cin >> i >> val;
    if (i == -1) {
        return;
    }
    cout << "1_" << a[0] << "\n";
    cout.flush();
    cin >> i >> val;
}

```

```

signed main() {
    /*#ifdef LOCAL
        freopen(INPUT_FILE.c_str(), "rt", stdin);
        freopen(OUTPUT_FILE.c_str(), "wt", stdout);
    #endif*/
    ios_base::sync_with_stdio(false);
    cin.tie(nullptr);
    cin >> n;
    a.resize(n);
    for (int &x: a) cin >> x;
    if (n == 1) {
        solve0();
        return 0;
    }
    vector<int> cur = a;
    set<pair<int, int>> lft;
    for (int i = 0; i < n; ++i) {
        lft.emplace(a[i], i + 1);
    }
    while (!lft.empty()) {
        if ((int)lft.size() == 1) {
            auto [x, y] = *lft.begin();
            if (x == 0) {
                cout << "-1_-1\n";
                cout.flush();
                break;
            }
            cout << y << "_" << x << "\n";
            cout.flush();
            x = 0;
            int i, val; cin >> i >> val;
            if (i == -1) {
                break;
            }
            cout << y << "_" << a[y - 1] << "\n";
            cout.flush();
            cin >> i >> val;
            break;
        }
        if ((int)lft.size() % 2 == 0) {
            auto [x, y] = *lft.rbegin();
            lft.erase(make_pair(x, y));
            cout << y << "_" << min(x, 1LL) << "\n";
            cout.flush();
            if (x == 0) {
                x = a[y - 1];
                a[y - 1] = -1;
            } else {
                x--;
                if (x > 0 || a[y - 1] > -1) {
                    lft.emplace(x, y);
                }
            }
            cur[y - 1] = x;
        } else {
            auto [x, y] = *lft.begin();
            lft.erase(make_pair(x, y));
            cout << y << "_" << x << "\n";
            cout.flush();
            if (x == 0) {
                x = a[y - 1];
            }

```

```

        a[y - 1] = -1;
    } else {
        x = 0;
        if (a[y - 1] > -1) {
            lft.emplace(x, y);
        }
    }
    cur[y - 1] = x;
}
int i, val; cin >> i >> val;
if (i == -1) {
    break;
}
lft.erase(make_pair(cur[i - 1], i));
cur[i - 1] -= val;
if (val == 0) {
    cur[i - 1] = a[i - 1];
    a[i - 1] = -1;
}
if (cur[i - 1] > 0 || a[i - 1] != -1) {
    lft.emplace(cur[i - 1], i);
}
}
}

```

Task E ()

```
#include <iostream>
#include <vector>
#include <iomanip>
#include <algorithm>
#include <cassert>
#include <fstream>
#include <set>
#include <map>
#include <unordered_set>
#include <unordered_map>
#include <string>
#include <queue>
#include <cmath>
#include <climits>
#include <bitset>
#include <random>
#include <deque>
#include <complex>
#include <ctime>
#include <chrono>
#include <cstdio>
#include <cstring>

#define X first
#define Y second
#define pb push_back
#define eb emplace_back
#define vll vector<long long>
#define vpll vector<pair<long long, long long>>
#define vvi vector<vector<long long>>
#define dbg(x) cerr << #x << ": " << x << "\n";
#define red(_, a) for (auto &_: a)
#define endln cout << "\n"
#define rep(i, n) for (long long i = 0; i < n; ++i)
#define per(i, n) for (long long i = n - 1; i >= 0; i--)
#define frep(i, a, n) for (long long i = a; i < n; ++i)
#define fper(i, a, n) for (long long i = n - 1; i >= a; i--)
#define pii pair<long long, long long>
#define pll pair<ll, ll>
#define pit pair<long long, pair<long long, long long>>
#define all(x) x.begin(), x.end()
const std::string INPUT_FILE = R"(C:\Users\gente\CLionProjects\coding\input.txt)";
const std::string OUTPUT_FILE = R"(C:\Users\gente\CLionProjects\coding\output.txt)";

template<class T>
bool ckmin(T &a, const T &b) {
    return b < a ? a = b, 1 : 0;
}

template<class T>
bool ckmax(T &a, const T &b) {
    return b > a ? a = b, 1 : 0;
}

template<class T>
std::ostream &operator<<(std::ostream &out, std::vector<T> v) {
    for (auto &_: v) out << _ << " ";
    out << "\n";
    return out;
}

// #include <ext/pb_ds/detail/standard_policies.hpp>
// #include <ext/pb_ds/assoc_container.hpp>
// using namespace __gnu_pbds;
// typedef tree<long long, null_type, less<long long>, rb_tree_tag,
//     tree_order_statistics_node_update> ordered_set;
using namespace std;
#define int long long

void solvef(){
    map<int, int> mp;
    int allCnt = 0;
    for (int i = 0; i < 10; ++i) {
```

```

    int cnt = 0;
    for (int j = 0; j < 10; ++j) {
        char val; cin >> val;
        cnt += (val == '1');
    }
    mp[cnt]++;
    allCnt += cnt;
}
if (allCnt == 100) {
    cout << "1000\n";
    return;
}
vector<pair<int, int>> st;
for (auto [x, y] : mp) {
    st.emplace_back(y, x);
}
sort(all(st));
if ((int)st.size() == 3) {
    string ans = to_string(st[0].second) + to_string(st[1].second) + to_string(st[2].second);
    cout << stoi(ans) << "\n";
    return;
}
if ((int)st.size() == 1) {
    if (!st[0].second) cout << "0\n";
    else {
        cout << st[0].second << st[0].second << st[0].second << "\n";
    }
    return;
}
if ((int)st.size() == 2) {
    string ans;
    if (st[0].first == 1) {
        ans += to_string(st[0].second);
        ans += to_string(st[1].second) + to_string(st[1].second);
        cout << stoi(ans) << "\n";
        return;
    }
    if (st[0].first == 3) {
        ans = to_string(st[1].second) + to_string(st[0].second) + to_string(st[1].second);
        cout << stoi(ans) << "\n";
        return;
    }
    if (st[0].first == 4) {
        ans = to_string(st[0].second) + to_string(st[0].second) + to_string(st[1].second);
        cout << stoi(ans) << "\n";
        return;
    }
}
}

void solves(){
    int n; cin >> n;
    assert(n <= 1000);
    if (n == 1000) {
        for (int i = 0; i < 10; ++i) {
            for (int j = 0; j < 10; ++j) {
                cout << "1";
            }
            cout << "\n";
        }
        cout << "\n";
        return;
    }
    string s = to_string(n);
    int cnt = (n <= 99 ? 0 : s[0] - '0');
    for (int i = 0; i < 10; ++i) {
        if (cnt-- > 0) cout << "1";
        else cout << "0";
    }
    cout << "\n";

    for (int j = 0; j < 3; ++j) {
        if (n >= 100) cnt = s[1] - '0';
        else if (n >= 10) cnt = s[0] - '0';
    }
}

```

```

        else cnt = 0;
        for (int i = 0; i < 10; ++i) {
            if (cnt == 0) cout << "1";
            else cout << "0";
        }
        cout << "\n";
    }
    for (int j = 0; j < 6; ++j) {
        cnt = s.back() - '0';
        for (int i = 0; i < 10; ++i) {
            if (cnt > 0) cout << "1";
            else cout << "0";
        }
        cout << "\n";
    }
    cout << "\n";
}

signed main() {
#ifdef LOCAL
    freopen(INPUT_FILE.c_str(), "rt", stdin);
    freopen(OUTPUT_FILE.c_str(), "wt", stdout);
#endif
    ios_base::sync_with_stdio(false);
    cin.tie(nullptr);
    int t; cin >> t;
    string op; cin >> op;
    while (t--) {
        if (op == "receive") {
            solvef();
        } else solves();
    }
}

```

Task F ()

```
#include <iostream>
#include <vector>
#include <iomanip>
#include <algorithm>
#include <cassert>
#include <fstream>
#include <set>
#include <map>
#include <unordered_set>
#include <unordered_map>
#include <string>
#include <queue>
#include <cmath>
#include <climits>
#include <bitset>
#include <random>
#include <deque>
#include <complex>
#include <ctime>
#include <chrono>
#include <cstdio>
#include <cstring>

#define X first
#define Y second
#define pb push_back
#define eb emplace_back
#define vll vector<long long>
#define vpll vector<pair<long long, long long>>
#define vvi vector<vector<long long>>
#define dbg(x) cerr << #x << ":_ " << x << "\n";
#define red(_, a) for (auto &_: a)
#define endln cout << "\n"
#define rep(i, n) for (long long i = 0; i < n; ++i)
#define per(i, n) for (long long i = n - 1; i >= 0; i--)
#define frep(i, a, n) for (long long i = a; i < n; ++i)
#define fper(i, a, n) for (long long i = n - 1; i >= a; i--)
#define pii pair<long long, long long>
#define pll pair<ll, ll>
#define pit pair<long long, pair<long long, long long>>
#define all(x) x.begin(), x.end()
const std::string INPUT_FILE = R"(C:\Users\gente\CLionProjects\coding\input.txt)";
const std::string OUTPUT_FILE = R"(C:\Users\gente\CLionProjects\coding\output.txt)";

template<class T>
bool ckmin(T &a, const T &b) {
    return b < a ? a = b, 1 : 0;
}

template<class T>
bool ckmax(T &a, const T &b) {
    return b > a ? a = b, 1 : 0;
}

template<class T>
std::ostream &operator<<(std::ostream &out, std::vector<T> v) {
    for (auto &_: v) out << _ << "_ ";
    out << "\n";
    return out;
}

// #include <ext/pb_ds/detail/standard_policies.hpp>
// #include <ext/pb_ds/assoc_container.hpp>
// using namespace __gnu_pbds;
// typedef tree<long long, null_type, less<long long>, rb_tree_tag,
//     tree_order_statistics_node_update> ordered_set;
using namespace std;
#define int long long

struct node{
    string sym;
    int cnt;
};
```

```

void mod(string &a, vector<node> &n1) {
    for (int i = 0; i < (int)a.size(); ++i) {
        if (a[i] == '('){
            string sym;
            int cnt = 0;
            int sign = i;
            for (int j = i + 1; j < (int)a.size(); ++j) {
                if (a[j] == '|') {
                    sym = a.substr(i + 1, j - i - 1);
                    sign = j;
                }
                if (a[j] == ')'){
                    cnt = stoi(a.substr(sign + 1, j - sign - 1));
                    i = j;
                    break;
                }
            }
            n1.push_back({sym, cnt});
        } else {
            string val;
            val.push_back(a[i]);
            n1.push_back({val, 1});
        }
    }
}

signed main() {
#ifdef LOCAL
    freopen(INPUT_FILE.c_str(), "rt", stdin);
    freopen(OUTPUT_FILE.c_str(), "wt", stdout);
#endif
    ios_base::sync_with_stdio(false);
    cin.tie(nullptr);
    string a, b; cin >> a >> b;
    vector<node> n1, n2;
    mod(a, n1);
    mod(b, n2);
    string ans;
    bool wasPassed = false;
    while (!n1.empty() && !n2.empty()) {
        auto [s1, c1] = n1.back();
        n1.pop_back();
        assert((int)s1.size() == 1);
        auto [s2, c2] = n2.back();
        n2.pop_back();
        assert((int)s2.size() == 1);
        int com = min(c1, c2);
        c1 -= com;
        c2 -= com;
        if (c1 > 0) n1.push_back({s1, c1});
        if (c2 > 0) n2.push_back({s2, c2});
        if (n2.empty() && !n1.empty()) {
            n2.push_back({"0", n1.back().cnt});
        }
        if (n1.empty() && !n2.empty()) {
            n1.push_back({"0", n2.back().cnt});
        }
    }
    bool wq = n1.empty() && n2.empty();
    int f = stoi(s1);
    int s = stoi(s2);
    int sum = f + s + wasPassed;
    string ss = to_string(sum);
    if (com == 1) {
        reverse(all(ss));
        if ((int)ss.size() > 1) {
            ss.pop_back();
            wasPassed = true;
        } else wasPassed = false;
        ans += ss;
        continue;
    }
    if ((int)ss.size() == 1) {
        if (wasPassed) {

```



```

        ans += ss;
        sum--;
        ss = to_string(sum);
        wasPassed = false;
        if (com > 2) com--;
        else {
            ans += ss;
            continue;
        }
        if (ss == "0" && wq) continue;
        string add = "(" + ss + "|" + to_string(com) + ")";
        reverse(all(add));
        ans += add;
        continue;
    }
    string rep = to_string(ss[1] - '0' + 1 - wasPassed);
    string add = "(" + rep + "|" + to_string(com - 1) + ")" + (wasPassed ? rep : to_string(ss
        [1] - '0'));
    reverse(all(add));
    ans += add;
    wasPassed = true;
}
if (wasPassed) {
    ans += "1";
}
reverse(all(ans));
cout << ans << "\n";
}

```