Олимпиада СПбГУ по информатике 2021/22 учебного года

A	B	C	D	E	F	Sum
100	100	100	60	58	31	449

Task A ()

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

using ll = long long;

int32_t main() {
    cin.tie(0);
    cout.tie(0);
    ios_base::sync_with_stdio(0);

    int n;
    cin >> n;

    vector<pair<ll, ll>> a(n);
    for (auto& i : a) {
        cin >> i.second >> i.first;
    }

    sort(a.begin(), a.end());

    ll ans = a.front().first;
    ll cur_sum = 0;
    for (int i = 0; i < n; i++) {
        if (ans == a[i].first) {
            cur_sum += a[i].second;
        } else {
            while (cur_sum % 10 == 0 && ans < a[i].first) {
                cur_sum /= 10;
                ans++;
            }

            if (ans == a[i].first) {
                cur_sum += a[i].second;
            } else {
                break;
            }
        }
    }

    while (cur_sum % 10 == 0) {
        cur_sum /= 10;
        ans++;
    }

    cout << ans << "\n";
    return 0;
}
```

Task B ()

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

using ll = long long;

string __res;
// -1 - stop, 0 - wait, 1 - flip
int ask(int type) {
    switch (type) {
        case -1:
            cout << "Stop" << endl;
            exit(0);
            break;
        case 0:
            cout << "Wait";
            break;
        case 1:
            cout << "Flip_and_wait";
            break;
    }
    cout << endl;

    cin >> __res;

    if (__res.back() != '!') {
        exit(0);
    }

    return (__res.size() - 3) / 2;
}

int32_t main() {
    cin.tie(0);
    cout.tie(0);
    ios_base::sync_with_stdio(0);

    int n;
    cin >> n;

    int ind = -1;
    vector<int> a(n);
    for (int i = 0; i < n; i++) {
        cin >> a[i];
        if (a[i] != 0) {
            ind = i;
        }
    }

    assert(ind != -1);

    do {
        int current = ask(1);
        while (current < (ind + 1)) {
            current += ask(0);
        }

        a[ind]--;
        while (ind > -1 && a[ind] == 0) {
            ind--;
        }
    } while (ind != -1);

    ask(-1);
    return 0;
}
```

Task C ()

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

using ll = long long;

int32_t main() {
    cin.tie(0);
    cout.tie(0);
    ios_base::sync_with_stdio(0);

    int t;
    cin >> t;

    string s;
    while (t--) {
        cin >> s;

        int cnt_0 = 0, cnt_1 = 0, cnt_q = 0;
        for (char c : s) {
            if (c == '0') {
                cnt_0++;
            }
            if (c == '1') {
                cnt_1++;
            }
            if (c == '?') {
                cnt_q++;
            }
        }

        //secondary
        if (cnt_q != 0) {
            for (int i = 1; i < s.size(); i += 2) {
                if (s[i] == '?') {
                    cout << s[i - 1] << s[i - 1];
                } else {
                    cout << (s[i] == '1' ? '0' : '1') << s[i];
                }
            }

            if (s.size() % 2 != 0) {
                cout << s.back();
            }
        } else {
            for (int i = 1; i < s.size(); i += 2) {
                if (s[i - 1] == s[i]) {
                    cout << s[i - 1] << '?';
                } else {
                    cout << '?' << s[i];
                }
            }

            if (s.size() % 2 != 0) {
                cout << s.back();
            }
        }

        cout << endl;
    }

    return 0;
}
```

Task D ()

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

using ll = long long;

const ll MOD = 998244353;

int32_t main() {
    long long n;
    cin >> n;

    ll fact = 1;

    for (int i = 2; i <= n + 1; i++) {
        fact = (fact * i) % MOD;
    }

    cout << 0 << "_" << fact;
    return 0;
}
```

Task E ()

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

using ll = long long;

int32_t main() {
    cin.tie(0);
    cout.tie(0);
    ios_base::sync_with_stdio(0);

    int n;
    cin >> n;

    vector<ll> v(n);
    for (int i = 0; i < n; i++) {
        cin >> v[i];
    }

    int q;
    cin >> q;

    while (q--) {
        ll ans = 0;

        int a, b; ll d;
        cin >> a >> b >> d;

        for (int i = a; i < b; i++) {
            ans += (d + v[i] - 1) / v[i];
        }

        cout << ans << "\n";
    }

    return 0;
}
```

Task F ()

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

using ll = long long;

int32_t main() {
    cin.tie(0);
    cout.tie(0);
    ios_base::sync_with_stdio(0);

    int n;
    cin >> n;

    ll mnv = 0, mxv = 0;

    vector<pair<ll, ll>> a(n + 1);
    vector<pair<ll, ll>> seg(n + 1);
    seg[0] = {0, 0};
    for (int i = 1; i <= n; i++) {
        ll l, r;
        cin >> l >> r;

        a[i] = {l, r};
        seg[i].first = seg[i - 1].first + l;
        seg[i].second = seg[i - 1].second + r;

        mnv = min(mnv, seg[i].first);
        mxv = max(mxv, seg[i].second);
    }

    int ans = -1;
    vector<int> dp(n + 10, 1);
    for (int i = 0; i <= n; i++) {
        for (int j = i + 1; j <= n; j++) {
            if (seg[j].first <= seg[i].first && seg[i].second <= seg[j].second) {
                dp[j] = max(dp[j], dp[i] + 1);
            }
        }

        ans = max(ans, dp[i]);
    }

    cout << ans << "\n";
    return 0;
}
```