

# Олимпиада СПбГУ по информатике 2021/22 учебного года

A	B	C	D	E	F	Sum
100	100	100	80	58	0	438

## Task A ()

```
#include <bits/stdc++.h>
#define T int t; cin >> t; while (t--)
#define all(x) (x).begin(), (x).end()
using namespace std;
typedef pair<int, int> pii;

void solve() {
    int n; cin >> n;
    priority_queue<pair<int, long long>> pq;
    pq.push({-2e9, 0});
    for (int i = 0; i < n; i++) {
        int a, b; cin >> a >> b;
        while (a % 10 == 0) {
            b++;
            a /= 10;
        }
        pq.push({-b, a});
    }
    int ans = 0;
    while (true) {
        int b1 = -pq.top().first; long long a1 = pq.top().second;
        pq.pop();
        int b2 = -pq.top().first; long long a2 = pq.top().second;
        pq.pop();
        if (b1 != b2) {
            ans = b1;
            break;
        }
        long long a3 = a1 + a2;
        int b3 = b1;
        while (a3 % 10 == 0) {
            b3++;
            a3 /= 10;
        }
        pq.push({-b3, a3});
    }
    cout << ans << '\n';
}

int main() {
    ios_base::sync_with_stdio(false); cin.tie(0);
    solve();
    return 0;
}
```

## Task B ()

```
#include <bits/stdc++.h>
#define T int t; cin >> t; while (t--)
#define all(x) (x).begin(), (x).end()
using namespace std;
typedef pair<int, int> pii;

int get0(int cmd) {
    if (cmd == 0) {
        cout << "Wait" << endl;
    } else {
        cout << "Flip_and_wait" << endl;
    }
    string s; cin >> s;
    int cnt = 0;
    for (int i = 0; i < s.size(); i++) {
        if (s[i] == 'e') {
            cnt++;
        }
    }
    return cnt / 2;
}

void solve() {
    int n; cin >> n;
    vector<int> k(n);
    for (int i = 0; i < n; i++) {
        cin >> k[i];
    }
    for (int i = 0; i < n; i++) {
        while (k[i] > 1) {
            int cnt = get0(1);
            while (cnt <= i) {
                cnt += get0(0);
            }
            cnt = get0(1);
            while (cnt <= i) {
                cnt += get0(0);
            }
            k[i] -= 2;
        }
    }
    for (int i = n - 1; i >= 0; i--) {
        if (k[i]) {
            int cnt = get0(1);
            while (cnt <= i) {
                cnt += get0(0);
            }
            k[i]--;
        }
    }
    cout << "Stop" << endl;
}

int main() {
    //ios_base::sync_with_stdio(false); //cin.tie(0);
    solve();
    return 0;
}
```

## Task C ()

```
#include <bits/stdc++.h>
#define T int t; cin >> t; while (t--)
#define all(x) (x).begin(), (x).end()
using namespace std;
typedef pair<int, int> pii;

void solve() {
    string s; cin >> s;
    int n = s.size();
    string ans;
    int second = 0;
    for (int i = 0; i < n; i++) {
        if (s[i] == '?') {
            second = 1;
            break;
        }
    }
    if (second) {
        for (int i = 0; i < n - 1; i += 2) {
            if (s[i] == '?') {
                ans += s[i + 1];
                ans += s[i + 1];
            } else {
                ans += s[i];
                ans += ('1' - (s[i] - '0'));
            }
        }
        if (n & 1) {
            ans += s.back();
        }
    } else {
        for (int i = 0; i < n - 1; i += 2) {
            if (s[i] == s[i + 1]) {
                ans += "?";
                ans += s[i + 1];
            } else {
                ans += s[i];
                ans += "?";
            }
        }
        if (n & 1) {
            ans += s.back();
        }
    }
    cout << ans << '\n';
}

int main() {
    ios_base::sync_with_stdio(false); cin.tie(0);
    T solve();
    return 0;
}
```

## Task D ()

```
#include <bits/stdc++.h>
#define T int t; cin >> t; while (t--)
#define all(x) (x).begin(), (x).end()
using namespace std;
typedef pair<int, int> pii;

const int MOD = 998244353;

void solve() {
    long long n; cin >> n;
    if (n > MOD) {
        return;
    }
    vector<long long> a{1,
                        980201571,
                        468660588,
                        478389955,
                        137136996,
                        203730522,
                        533107751,
                        496409701,
                        637333574,
                        465585441};

    vector<long long> b{1,
                        808258749,
                        117153405,
                        761699708,
                        573994984,
                        62402409,
                        511621808,
                        242726978,
                        887890124,
                        875880304};

    vector<long long> c{1,
                        980201571,
                        468660588,
                        478389955,
                        137136996,
                        203730522,
                        533107751,
                        496409701,
                        637333574,
                        465585441};

    long long j = n / 100000000;
    long long ans = a[j];
    long long ppr = b[j], pr = c[j];
    for (long long i = j * 100000000 + 1; i <= n; i++) {
        ans = (ans + i * i % MOD * ppr) % MOD;
        ppr = pr;
        pr = ans;
    }
    cout << 0 << '␣' << ans << '\n';
}

int main() {
    ios_base::sync_with_stdio(false); cin.tie(0);
    solve();
    return 0;
}
```

## Task E ()

```
#include <bits/stdc++.h>
#define T int t; cin >> t; while (t--)
#define all(x) (x).begin(), (x).end()
using namespace std;
typedef pair<int, int> pii;

void solve() {
    int n; cin >> n;
    vector<int> v(n);
    for (int i = 0; i < n; i++) {
        cin >> v[i];
    }
    int q; cin >> q;
    while (q--) {
        int a, b, d; cin >> a >> b >> d;
        long long ans = 0;
        for (int i = a; i < b; i++) {
            ans += (d + v[i] - 1) / v[i];
        }
        cout << ans << '\n';
    }
}

int main() {
    ios_base::sync_with_stdio(false); cin.tie(0);
    solve();
    return 0;
}
```

## Task F ()