

Олимпиада «Ломоносов» по информатике  
2025-2026 учебный год. Заключительный этап  
Работа участника с id заявки 1544899, логином inf26f\_136

Сводный итог по всем задачам в проверяющей системе

Run ID	Time	User name	Problem	Language	Result	Tests	Score
1157	3:47:53	inf26f_136	6	g++	OK	21	100
844	3:05:18	inf26f_136	7	pyru3	OK	11	100
797	2:55:50	inf26f_136	3	pyru3	OK	23	100
367	1:30:52	inf26f_136	5	g++	OK	103	100
332	1:23:35	inf26f_136	4	g++	OK	103	100
141	0:48:02	inf26f_136	2	g++	OK	53	100
53	0:29:09	inf26f_136	1	pyru3	OK	23	100
700 (семьсот) технических баллов							
100 (сто) итоговых баллов							



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## Посылка по задаче 1

```
[1] n = int(input())
[2] ans = [[] for i in range(n)]
[3] mn = 0
[4] mx = 0
[5] L = 0
[6] for i in range(n):
[7]     s = list(input().split('.'))
[8]     for let in s:
[9]         was = False
[10]        d = 0
[11]        e = 0
[12]        for c in let:
[13]            if c == 'I':
[14]                was = True
[15]                e += 1
[16]            elif c == 'X':
[17]                if was:
[18]                    e = 10 - e
[19]                else:
[20]                    d += 10
[21]            elif c == 'L':
[22]                d = 50 - d
[23]            elif c == 'V':
[24]                was = True
[25]                e = 5 - e
[26]            d += e
[27]            ans[i].append(d)
[28]        ans[i] = ans[i][-1::-1]
[29]        L = max(L, len(ans[i]))
[30]    for i in range(n):
[31]        while len(ans[i]) < L:
[32]            ans[i].append(0)
[33]        ans[i] = ans[i][-1::-1]
[34]        if ans[mx] < ans[i]:
[35]            mx = i
[36]        if ans[mn] > ans[i]:
[37]            mn = i
[38]        # print(ans[i])
[39]    was = False
[40]    for c in ans[mn]:
[41]        if c == 0:
[42]            if was:
[43]                print('A', end="")
[44]        elif c > 25:
[45]            was = True
[46]            print(chr(c - 26 + ord('a')), end="")
[47]        else:
[48]            print(chr(c + ord('A')), end="")
[49]            was = True
[50]    if not was:
[51]        print('A', end="")
[52]    print()
[53]    was = False
[54]    for c in ans[mx]:
[55]        if c == 0:
[56]            if was:
[57]                print('A', end="")
[58]        elif c > 25:
[59]            was = True
[60]            print(chr(c - 26 + ord('a')), end="")
[61]        else:
[62]            print(chr(c + ord('A')), end="")
[63]            was = True
[64]    if not was:
[65]        print('A', end="")
[66]    print()
```

## Посылка по задаче 2

```
[1] #include <bits/stdc++.h>
[2]
[3] using namespace std;
[4] using ll = long long;
[5] using ull = long long;
[6] using ld = long double;
[7]
[8] mt19937 rng(chrono::steady_clock::now().time_since_epoch().count());
[9]
[10] int main() {
[11]     ios::sync_with_stdio(false);
[12]     cin.tie(nullptr);
[13]     int n;
[14]     cin >> n;
[15]     map <int, int> cnt;
[16]     while (n--) {
[17]         int x;
[18]         cin >> x;
[19]         if (x < 2) continue;
[20]         bool isPrime = true;
[21]         for (ll d = 2; d * d <= x && isPrime; ++d) {
[22]             isPrime = (x % d);
[23]         }
[24]         if (!isPrime) continue;
[25]         for (ll b = 2; b < 400 && isPrime; ++b) {
[26]             ll cur = b * b + b + 1;
[27]             while (cur < x) {
[28]                 cur = cur * b + 1;
[29]             }
[30]             if (cur == x) {
[31]                 isPrime = false;
[32]             }
[33]         }
[34]         if (!isPrime) {
[35]             cnt[x]++;
[36]         }
[37]     }
[38]     int a = 0, c = 0;
[39]     for (const auto [t, y] : cnt) {
[40]         if (c <= y) {
[41]             a = t;
[42]             c = y;
[43]         }
[44]     }
[45]     cout << a << "\n";
[46]     return 0;
[47] }
```

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### Посылка по задаче 3

```
[1] n = int(input())
[2] i = int(input())
[3] j = int(input())
[4] d = min(i - 1, j - 1, n - i, n - j)
[5] m = n
[6] add = 0
[7] for k in range(d):
[8]     add += 4 * m - 4
[9]     m -= 2
[10] if i - 1 == d:
[11]     print(add + j - d - 1)
[12] elif j - 1 == d:
[13]     print(add + n - d + 3 * m - 3 - i)
[14] elif n - j == d:
[15]     print(add + i + m - d - 2)
[16] else:
[17]     print(add + n - d + 2 * m - 2 - j)
```

#### Посылка по задаче 4

```
[1] #include <bits/stdc++.h>
[2]
[3] using namespace std;
[4] using ll = long long;
[5] using ull = long long;
[6] using ld = long double;
[7]
[8] const int INF = 1e9 + 2;
[9]
[10] mt19937 rng(chrono::steady_clock::now().time_since_epoch().count());
[11]
[12] int main() {
[13]     ios::sync_with_stdio(false);
[14]     cin.tie(nullptr);
[15]     int n;
[16]     cin >> n;
[17]     vector <int> a(n);
[18]     for (int i = 0; i < n; ++i) {
[19]         cin >> a[i];
[20]     }
[21]     reverse(a.begin(), a.end());
[22]     vector <int> dp(n + 1, INF);
[23]     dp[0] = -1;
[24]     for (const int & x : a) {
[25]         int L = 0, R = n;
[26]         while (R - L > 1) {
[27]             int mid = (L + R) >> 1;
[28]             if (dp[mid] <= x) {
[29]                 L = mid;
[30]             } else {
[31]                 R = mid;
[32]             }
[33]         }
[34]         dp[R] = min(dp[R], x);
[35]     }
[36]     for (int i = n; i >= 0; --i) if (dp[i] < INF) {
[37]         cout << n - i << "\n";
[38]         return 0;
[39]     }
[40]     return 0;
[41] }
```

## Посылка по задаче 5

```
[1] #include <bits/stdc++.h>
[2]
[3] using namespace std;
[4] using ll = long long;
[5] using ull = long long;
[6] using ld = long double;
[7]
[8] mt19937 rng(chrono::steady_clock::now().time_since_epoch().count());
[9]
[10] int main() {
[11]     ios::sync_with_stdio(false);
[12]     cin.tie(nullptr);
[13]     int n;
[14]     cin >> n;
[15]     vector <array <int, 3>> moun(n);
[16]     for (int i = 0; i < n; ++i) {
[17]         int x, y, h;
[18]         cin >> x >> y >> h;
[19]         moun[i] = {x, y, h};
[20]     }
[21]     sort(moun.begin(), moun.end());
[22]     vector <int> dp(n, 1);
[23]     int ans = 1;
[24]     for (int i = 0; i < n; ++i) {
[25]         for (int j = 0; moun[j][0] < moun[i][0]; ++j) {
[26]             if (moun[j][1] < moun[i][1] && moun[j][2] > moun[i][2]) {
[27]                 dp[i] = max(dp[i], dp[j] + 1);
[28]             }
[29]         }
[30]         ans = max(ans, dp[i]);
[31]     }
[32]     cout << ans << "\n";
[33]     return 0;
[34] }
```

## Посылка по задаче 6

```
[1] #pragma GCC optimize("O3,unroll-loops")
[2] #include <bits/stdc++.h>
[3]
[4] using namespace std;
[5] using ll = long long;
[6] using ull = long long;
[7] using ld = long double;
[8]
[9] mt19937 rng(chrono::steady_clock::now().time_since_epoch().count());
[10]
[11] const int N = 20;
[12] string field[N];
[13] int r, c;
[14] bool took[N][N];
[15] array <int, 5> z;
[16]
[17] ll f(int i, int j) {
[18]     while (i < r && (field[i][j] == '.' || took[i][j])) {
[19]         j++;
[20]         if (j == c) {
[21]             j = 0;
[22]             i++;
[23]         }
[24]     }
[25]     if (i == r) {
[26]         return (z[1]+z[2]+z[3]+z[4] == 0);
[27]     }
[28]     ll ans = 0;
[29]     if (z[1]) {
[30]         took[i][j] = true;
[31]         z[1]--;
[32]         ans += f(i, j);
[33]         took[i][j] = false;
[34]         z[1]++;
[35]     }
[36]     for (int len = 2; len <= 4; ++len) if (z[len] && i + len <= r) {
[37]         bool good = true;
[38]         for (int k = i; k < i + len && good; ++k) {
[39]             good = (!took[k][j] && field[k][j] == '#');
[40]         }
[41]         if (!good) continue;
[42]         for (int k = i; k < i + len; ++k) {
[43]             took[k][j] = true;
[44]         }
[45]         z[len]--;
[46]         ans += f(i, j);
[47]         for (int k = i; k < i + len; ++k) {
[48]             took[k][j] = false;
[49]         }
[50]         z[len]++;
[51]     }
[52]     for (int len = 2; len <= 4; ++len) if (z[len] && j + len <= c) {
[53]         bool good = true;
[54]         for (int k = j; k < j + len && good; ++k) {
[55]             good = (!took[i][k] && field[i][k] == '#');
[56]         }
[57]         if (!good) continue;
[58]         for (int k = j; k < j + len; ++k) {
[59]             took[i][k] = true;
[60]         }
[61]         z[len]--;
[62]         ans += f(i, j);
[63]         for (int k = j; k < j + len; ++k) {
[64]             took[i][k] = false;
[65]         }
[66]         z[len]++;
[67]     }
[68]     return ans;
[69] }
[70]
[71] int main() {
[72]     ios::sync_with_stdio(false);
[73]     cin.tie(nullptr);
[74]     cin >> z[1] >> z[2] >> z[3] >> z[4];
[75]     cin >> r >> c;
[76]     for (int i = 0; i < r; ++i) {
[77]         cin >> field[i];
[78]     }
[79]     cout << f(0, 0) << "\n";
[80]     return 0;
[81] }
```

## Посылка по задаче 7

```
[1] inp = open("input.txt", "r")
[2] um = {}
[3] from math import *
[4]
[5] def getD(s):
[6]     d = 0
[7]     z = (s[0] == '-')
[8]     i = not s[0].isdigit()
[9]     j = i
[10]    while (i < len(s)):
[11]        while s[i].isdigit() or s[i] == '.':
[12]            i += 1
[13]            if s[i] == 'o':
[14]                d += float(s[j:i]) * 3600
[15]            elif s[i] == '':
[16]                d += float(s[j:i]) * 60
[17]            else:
[18]                d += float(s[j:i])
[19]            j = i + 1
[20]            i += 1
[21]    d = acos(-1) * d / 3600 / 180
[22]    if (z):
[23]        d *= -1
[24]    return d
[25]
[26] def getP(s):
[27]     p = 0
[28]     i = 0
[29]     j = i
[30]    while i < len(s):
[31]        while s[i].isdigit() or s[i] == '.':
[32]            i += 1
[33]            if s[i] == 'h':
[34]                p += float(s[j:i]) * 3600
[35]            elif s[i] == 'm':
[36]                p += float(s[j:i]) * 60
[37]            else:
[38]                p += float(s[j:i])
[39]            j = i + 1
[40]            i += 1
[41]    p = acos(-1) * p / 12 / 3600
[42]    return p
[43]
[44] for line in inp:
[45]     data = list(line.rstrip().split())
[46]     if len(data) == 1:
[47]         break
[48]     name = data[0]
[49]     p = getD(data[1])
[50]     d = getP(data[2])
[51]     R = float(data[3])
[52]     um[name] = [R * cos(p) * sin(d), R * cos(p) * cos(d), R * sin(p)]
[53] ans = 0
[54] for line in inp:
[55]     data = list(line.rstrip().split())
[56]     name = data[0]
[57]     if name not in um:
[58]         continue
[59]     p = getD(data[1])
[60]     d = getP(data[2])
[61]     R = float(data[3])
[62]     t = um[name]
[63]     dx = t[0] - R * cos(p) * sin(d)
[64]     dy = t[1] - R * cos(p) * cos(d)
[65]     dz = t[2] - R * sin(p)
[66]     ans = max(ans, sqrt(dx * dx + dy * dy + dz * dz))
[67] print(ans)
```