

Олимпиада «Ломоносов» по информатике
2025-2026 учебный год. Заключительный этап
Работа участника с id заявки 1626396, логином inf26f_255

Сводный итог по всем задачам в проверяющей системе

Run ID	Time	User name	Problem	Language	Result	Tests	Score
1238	3:53:53	inf26f_255	6	python3	OK	21	100
1027	3:31:36	inf26f_255	1	python3	OK	23	100
810	2:59:45	inf26f_255	7	g++	OK	11	100
705	2:37:44	inf26f_255	3	python3	Partial solution	19	80
237	1:03:49	inf26f_255	4	g++	OK	103	100
128	0:43:37	inf26f_255	5	g++	Partial solution	71	68
21	0:19:39	inf26f_255	2	g++	Partial solution	5	4

552 (пятьсот пятьдесят два) технических балла
79 (семьдесят девять) итоговых баллов



председатель Жюри кандидат физ.-мат. наук Малышко В. В.



зам. председателя Жюри кандидат физ.-мат. наук Корныхин Е. В.

Посылка по задаче 1

```
[1] from string import ascii_lowercase, ascii_uppercase
[2]
[3] M = {
[4]     'N': 0,
[5]     'I': 1,
[6]     'V': 5,
[7]     'X': 10,
[8]     'L': 50,
[9] }
[10]
[11] D = ascii_uppercase + ascii_lowercase
[12]
[13] def parse_rim(s):
[14]     if s == []: return 0
[15]     m = max(s)
[16]     if (s.count(m) == len(s)): return sum(s)
[17]     i = s.index(m)
[18]     return parse_rim(s[i:i+1]) + parse_rim(s[i+1:]) - parse_rim(s[:i])
[19]
[20] def parse_num(s):
[21]     d = [parse_rim([M[j] for j in i]) for i in s.split('.')]
[22]     d = reversed(d)
[23]     p = 1
[24]     r = 0
[25]     for i in d:
[26]         r += i * p
[27]         p *= 52
[28]     return r
[29]
[30] def to_buk(n):
[31]     s = ''
[32]
[33]     ok = False
[34]     while n:
[35]         ok = True
[36]         o = n % 52
[37]         n //= 52
[38]         s = D[o] + s
[39]
[40]     if ok: return s
[41]     return 'A'
[42]
[43]
[44] k = int(input())
[45]
[46] s = [parse_num(input()) for i in range(k)]
[47]
[48] print(to_buk(min(s)))
[49] print(to_buk(max(s)))
```

Посылка по задаче 2

```
[1] #include <bits/stdc++.h>
[2] using namespace std;
[3] set<int> ok = {143365, 7, 20491, 81931, 13, 15, 4111, 21, 23, 120856, 2071, 4126, 31,
6175, 16421, 39, 40, 43, 47, 75830, 55, 57, 10297, 63, 2111, 30784, 67, 2115, 49221, 71,
28744, 6217, 73, 2121, 8265, 4173, 81991, 79, 4169, 149579, 96339, 85, 87, 14425, 69721,
91, 43099, 22621, 94, 95, 125017, 103, 65641, 111, 139378, 2163, 119, 75895, 121, 98427,
10366, 127, 133, 135, 135304, 148, 149, 96407, 2203, 156, 157, 96421, 175, 183, 53431,
151740, 37054, 94401, 37060, 202, 41167, 2257, 211, 213, 30941, 229, 2278, 8421, 22765,
241, 8443, 90366, 256, 259, 24849, 41233, 57617, 74002, 28945, 45329, 61713, 273, 4369,
8465, 277, 281, 283, 10525, 49437, 16675, 24872, 139565, 2353, 112945, 307, 310, 24887,
74038, 102713, 119103, 24907, 2380, 18767, 337, 341, 343, 33041, 88421, 364, 4465, 33138,
2419, 33139, 381, 76159, 47491, 108931, 108934, 391, 400, 2451, 405, 406, 2458, 41371,
20893, 59806, 418, 4516, 421, 47526, 12720, 94645, 14774, 149948, 445, 463, 469, 475,
37137, 20958, 149983, 4577, 106987, 49649, 53747, 37366, 2551, 507, 6652, 35335, 88583,
158221, 531, 533, 10781, 80421, 18985, 553, 88621, 41535, 127551, 4681, 6729, 2635, 585,
2633, 597, 601, 55897, 111193, 8797, 2653, 27241, 129641, 6774, 111227, 37507, 6788, 8839,
651, 656, 661, 62112, 25260, 64176, 691, 70327, 39611, 703, 2757, 15046, 158407, 125651,
725, 17116, 19165, 56029, 72421, 743, 2795, 2801, 757, 4859, 135931, 82689, 15111, 8971,
781, 11026, 789, 2851, 813, 2863, 820, 13111, 74551, 29503, 6991, 853, 123735, 52060, 49425,
129886, 103266, 99172, 11111, 871, 154477, 47989, 117635, 906, 907, 2955, 64395, 93073,
11155, 917, 9111, 2971, 7069, 11168, 931, 64421, 11187, 21429, 78776, 3007, 7111, 981,
19419, 53521, 54241, 993, 87011, 111595, 64495, 70644, 5111, 3067, 27651, 158724, 1031,
93196, 35855, 1045, 17436, 17437, 1057, 33825, 66593, 99361, 132129, 56355, 3111, 35883,
13365, 1086, 78915, 130117, 3144, 5193, 5194, 1097, 7241, 7240, 54350, 3145, 5202, 44115,
44116, 1111, 29785, 42073, 97369, 152665, 1123, 5220, 56421, 44136, 66669, 23671, 146557,
87165, 13443, 1156, 27805, 31901, 148639, 60575, 158887, 1191, 27817, 99499, 40123, 33991,
15562, 3283, 7381, 5341, 156901, 9450, 1261, 134390, 1281, 48394, 128283, 27931, 75043,
120100, 48421, 72997, 58663, 138538, 21803, 1333, 23866, 1339, 5457, 15709, 65809, 17759,
9568, 71007, 120157, 68971, 122223, 1406, 1407, 120199, 1429, 3487, 128421, 5545, 3499, 13741,
132525, 17839, 1464, 110026, 1483, 89548, 60880, 93655, 26077, 69089, 40421, 144871,
110056, 11755, 44524, 19956, 19959, 81400, 1531, 9724, 1549, 1555, 1561, 3613, 3616, 110125,
40495, 5699, 5705, 1609, 7753, 3657, 28246, 28249, 83545, 138841, 52831, 106080, 97889, 120421,
1641, 13931, 1656, 79489, 20098, 22153, 22163, 54931, 3736, 13981, 32421, 44717, 63151, 46768,
106159, 50866, 138931, 30395, 85691, 1723, 32451, 85722, 12561, 38627, 12007, 16105, 1771,
1772, 16111, 1781, 3830, 147205, 65290, 87823, 1807, 14099, 153366, 24349, 24350, 14111,
5923, 40741, 112421, 12111, 12112, 73555, 1885, 16657, 83812, 24421, 1893, 18279, 1906,
34676, 10111, 59263, 34698, 16276, 10133, 46999, 30616, 8110, 8111, 26547, 8119, 79799,
1981, 102334, 122816, 1987, 61388, 55253, 20440, 141276, 12253, 20753, 6111, 104421,
118855, 110573, 2031, 141301, 141311};
[4]
[5] bool is_p(int x) {
[6]     for (int i = 2; i < floor(sqrt(x)); i++) {
[7]         if (x % i == 0) return 0;
[8]     }
[9]
[10]     return 1;
[11]}
[12]
[13] int main() {
[14]     int n; cin >> n;
[15]     map<int, int> c;
[16]     while (n--) {
[17]         int x; cin >> x;
[18]         if (!is_p(x)) continue;
```

```
[19]         if (ok.count(x) < 1) continue;
[20]         c[x]++;
[21]     }
[22]
[23]     int rk = 0, rv = 0;
[24]
[25]     for (const auto &[k, v]: c) {
[26]         if (v >= rv) {
[27]             rv = v;
[28]             rk = k;
[29]         }
[30]     }
[31]
[32]     cout << rk << "\n";
[33]}
```

Посылка по задаче 3

```
[1] n = int(input())
[2] x = int(input())
[3] y = int(input())
[4]
[5] y -= 1
[6] x -= 1
[7]
[8] dx = x
[9] dy = y
[10]
[11] if dx >= n//2: dx = n - dx-1
[12] if dy >= n//2: dy = n - dy-1
[13]
[14] q = min(dy, dx)
[15]
[16] if q == 0:
[17]     s = 0
[18] else:
[19]     s = 4 * q * n - (4 + 4 + 8*(q-1)) * q//2
[20]
[21] o = n - q*2
[22]
[23] x -= q
[24] y -= q
[25]
[26] if x == 0:
[27]     print(s + y)
[28] elif y == 0-1:
[29]     print(s + o + x - 2)
[30] elif x == 0-1:
[31]     print(s + o + o + o - 3 - y)
[32] else:
[33]     print(s + o + o + o + o - 4 - x)
```

Посылка по задаче 4

```
[1] #include <bits/stdc++.h>
[2] using namespace std;
[3]
[4] int main() {
[5]     int n; cin >> n;
[6]     vector<int> h(n); for (int &hi: h) cin >> hi;
[7]     vector<int> dp(n);
[8]
[9]     set<pair<int, int>> q;
[10]
[11]     for (int i = 0; i < n; i++) {
[12]         bool f = 1;
[13]         for (auto it = q.rbegin(); it != q.rend(); it++) {
[14]             if(it->second >= h[i]) {
[15]                 dp[i] = it->first + 1;
[16]                 f = 0;
[17]                 break;
[18]             }
[19]         }
[20]
[21]         if (f) dp[i] = 1;
[22]
[23]         q.insert({dp[i], h[i]});
[24]     }
[25]
[26]     cout << (n - *max_element(dp.begin(), dp.end())) << "\n";
[27] }
```

Посылка по задаче 5

```
[1] #include <bits/stdc++.h>
[2] using namespace std;
[3]
[4] struct G {
[5]     int x, y, h;
[6] };
[7]
[8] vector<vector<int>> adj;
[9] vector<int> radj;
[10]
[11] vector<bool> vis;
[12]
[13] vector<int> top;
[14]
[15] void dfs(int u) {
[16]     if (vis[u]) return;
[17]     vis[u] = 1;
[18]     top.push_back(u);
[19]     for (int v: adj[u]) dfs(v);
[20] }
[21]
[22] int main() {
[23]     int n; cin >> n;
[24]     vis.resize(n);
[25]     adj.resize(n);
[26]     radj.resize(n);
[27]     vector<G> g(n); for (G &gi: g) cin >> gi.x >> gi.y >> gi.h;
[28]
[29]     for (int i = 0; i < n; i++) for (int j = 0; j < n; j++)
[30]         if (g[j].x > g[i].x && g[j].y > g[i].y && g[j].h < g[i].h) {
[31]             adj[i].push_back(j);
[32]             radj[j]++;
[33]         }
[34]
[35]     for (int i = 0; i < n; i++) dfs(i);
[36]
[37]     vector<int> dp(n);
[38]
[39]     for (int u: top) {
[40]         if (radj[u] == 0) dp[u] = 1;
[41]
[42]         for (int v: adj[u]) dp[v] = max(dp[v], dp[u] + 1);
[43]     }
[44]
[45]     cout << *max_element(dp.begin(), dp.end()) << "\n";
[46] }
```

Посылка по задаче 6

```
[1] def calc(n, s):
[2]     if sum(n) == 0: return 1
[3]     r = 0
[4]
[5]     for r1, c in enumerate(n):
[6]         if c == 0: continue
[7]         l = r1 + 1
[8]
[9]         xok = True
[10]        for x in range(1): xok = xok and ((s[0][0]+x, s[0][1]) in s)
[11]        if xok:
[12]            s0 = [i for i in s]
[13]            n0 = [i for i in n]
[14]            for x in range(1): s0.remove((s[0][0]+x, s[0][1]))
[15]            n0[r1] -= 1
[16]            r += calc(n0, s0)
[17]
[18]        if l == 1: continue
[19]
[20]        yok = True
[21]        for y in range(1): yok = yok and ((s[0][0], s[0][1]+y) in s)
[22]        if yok:
[23]            s0 = [i for i in s]
[24]            n0 = [i for i in n]
[25]            for y in range(1): s0.remove((s[0][0], s[0][1]+y))
[26]            n0[r1] -= 1
[27]            r += calc(n0, s0)
[28]
[29]    return r
[30]
[31] n1, n2, n3, n4, h, w = [int(i) for i in input().split()]
[32] s = [input().strip() for i in range(h)]
[33] p = []
[34] for y in range(h):
[35]     for x in range(w):
[36]         if s[y][x] == '#':
[37]             p.append((x, y))
[38]
[39]
[40] print(calc([n1, n2, n3, n4], p))
```

Посылка по задаче 7

```
[1] #include <bits/stdc++.h>
[2] using namespace std;
[3]
[4] using F = double;
[5]
[6] struct C {
[7]     string name;
[8]     F a, l, d;
[9] };
[10]
[11] F parse_a(F d, F m, F s) {
[12]     return d + m / 60.0 + s / 3600.0;
[13] }
[14]
[15] F parse_l(F h, F m, F s) {
[16]     return (h + m / 60.0 + s / 3600.0) * 360 / 24;
[17] }
[18]
[19] optional<C> parse_c() {
[20]     char name[1024];
[21]
[22]     char s;
[23]     F ad, am, as;
[24]     F lh, lm, ls;
[25]     F d;
[26]
[27]     int n0 = scanf("%s", name);
[28]     string name_s(name);
[29]
[30]     if (n0 != 1) return nullopt;
[31]     if (name_s == "--") return nullopt;
[32]
[33]     int n = scanf(" %c%lf°%lf'%" %lfh%lfm%lfs %lf", &s, &ad, &am, &as, &lh, &lm, &ls, &d);
[34]     if (n != 8) return nullopt;
[35]
[36]     F a = parse_a(ad, am, as);
[37]     if (s == '-') a = -a;
[38]
[39]     F l = parse_l(lh, lm, ls);
[40]
[41]     C c = { name_s, a, l, d };
[42]     return c;
[43] }
[44]
[45] struct P {
[46]     F x, y, z;
[47] };
[48]
[49] P parse_p(F a, F l, F d) {
[50]     a = a * M_PI / 180;
[51]     l = l * M_PI / 180;
[52]
[53]     F x = cosl(a) * cosl(l) * d;
[54]     F y = sinl(a) * cosl(l) * d;
[55]     F z = sinl(l) * d;
[56]     return { x, y, z };
[57] }
[58]
[59] int main() {
[60]     map<string, P> a, b;
[61]     for (;;) {
[62]         optional<C> c; c = parse_c();
[63]         if (c.has_value()) {
[64]             C v = c.value();
[65]             a[v.name] = parse_p(v.l, v.a, v.d);
[66]         } else {
[67]             break;
[68]         }
[69]     }
[70]
```

```

[71]     for (;;) {
[72]         optional<C> c; c = parse_c();
[73]         if (c.has_value()) {
[74]             C v = c.value();
[75]             b[v.name] = parse_p(v.l, v.a, v.d);
[76]         } else {
[77]             break;
[78]         }
[79]     }
[80]
[81]     F r = -1;
[82]
[83]     for (const auto &[k, v]: a) {
[84]         if (b.count(k) == 0) continue;
[85]
[86]         F dx = v.x - b[k].x;
[87]         F dy = v.y - b[k].y;
[88]         F dz = v.z - b[k].z;
[89]
[90]         F d = sqrtl(dx*dx + dy*dy + dz*dz);
[91]
[92]         r = max(r, d);
[93]     }
[94]
[95]     if (r < 0) {
[96]         cout << "-1\n";
[97]     } else {
[98]         cout << fixed << setprecision(10) << r << "\n";
[99]     }
[100] }

```