

Олимпиада «Ломоносов» по информатике  
2025-2026 учебный год. Заключительный этап  
Работа участника с id заявки 1581202, логином inf26f\_144

Сводный итог по всем задачам в проверяющей системе

Run ID	Time	User name	Problem	Language	Result	Tests	Score
1317	3:58:25	inf26f_144	6	g++	Partial solution	4	15
1043	3:34:30	inf26f_144	7	python3	Partial solution	1	0
793	2:54:35	inf26f_144	1	pyru3	OK	23	100
463	1:53:19	inf26f_144	3	g++	OK	23	100
287	1:13:43	inf26f_144	5	g++	Partial solution	66	63
116	0:41:13	inf26f_144	4	g++	OK	103	100
19	0:18:55	inf26f_144	2	g++	OK	53	100

478 (четырееста семьдесят восемь) технических баллов  
68 (шестьдесят восемь) итоговых баллов



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## Посылка по задаче 1

```
[1] from string import ascii_letters
[2] map1 = "ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz"
[3] map2 = {
[4]     'N': 0,
[5]     'I': 1,
[6]     'V': 5,
[7]     'X': 10,
[8]     'L': 50
[9] }
[10] k = int(input())
[11] res = [[0, ''] for _ in range(k)]
[12] for i in range(k):
[13]     s = input().split('.')
[14]     for o in range(len(s)):
[15]         b = s[o]
[16]         sum = 0
[17]         for j in range(len(b)):
[18]             if b[j] in "LNV":
[19]                 sum += map2[b[j]]
[20]                 continue
[21]             if b[j] == 'I':
[22]                 flag = False
[23]                 for k in range(j + 1, min(len(b), j + 15)):
[24]                     if b[k] != 'I':
[25]                         if b[k] == 'V' and k - j <= 5 or b[k] == 'X' and k - j <= 10:
[26]                             sum -= 1
[27]                         else:
[28]                             sum += 1
[29]                             flag = True
[30]                             break
[31]                 if not flag: sum += 1
[32]             if b[j] == 'X':
[33]                 flag = False
[34]                 for k in range(j + 1, min(len(b), j + 15)):
[35]                     if b[k] != 'X':
[36]                         if b[k] == 'L' and k - j <= 5:
[37]                             sum -= 10
[38]                         else:
[39]                             sum += 10
[40]                             flag = True
[41]                             break
[42]                 if not flag: sum += 10
[43]             res[i][0] += sum * (52**((len(s) - o - 1)))
[44]             res[i][1] += map1[sum]
[45] res.sort()
[46]
[47] print(res[0][1])
[48] # print(res[0][0])
[49] print(res[-1][1])
[50] # print(res[-1][0])
[51]
[52]
```

## Посылка по задаче 2

```
[1]
[2] #include <bits/stdc++.h>
[3] #include <iostream>
[4] using namespace std;
[5] #define int long long
[6] signed main() {
[7]     int up = 160'000;
[8]     vector<int> d(up + 1), pr;
[9]     vector<bool> is(up+1);
[10]    for (int i = 2; i <= up; ++i){
[11]        if(d[i]==0){
[12]            d[i]=i;
[13]            pr.push_back(i);
[14]        }
[15]        for (int p: pr){
[16]            if(p > d[i] || p * i > up){break;}
[17]            d[i * p]=p;
[18]        }
[19]    }
[20]    for (int x = 1; x<= 160'000; ++x){
[21]        int num = 0;
[22]        int cur = 1;
[23]        for (int i = 1; i <= 1000; ++i){
[24]            num += cur;
[25]            cur*=x;
[26]            if(num > up){break;}
[27]            if(i>=3){
[28]                if(d[num]==num){
[29]                    is[num]=true;
[30]                }
[31]            }
[32]        }
[33]    }
[34]
[35]    int n, mx_cnt = 0;
[36]    cin>>n;
[37]    vector<int>a(n);for (int &i:a){cin>>i;}
[38]    map<int,int>cnts;
[39]    for (int i = 0; i < n; ++i){
[40]        if(is[a[i]]){
[41]            if(cnts.find(a[i])==cnts.end()){
[42]                cnts[a[i]]=0;
[43]            }
[44]            ++cnts[a[i]];
[45]            mx_cnt = max(mx_cnt, cnts[a[i]]);
[46]        }
[47]    }
[48]    int ans = 0;
[49]    for (auto [i, cnt]: cnts){
[50]        if(cnt ==mx_cnt){ans = max(ans, i);}
[51]    }
[52]    cout<<ans;
[53] }
```

### Посылка по задаче 3

```
[1]
[2] #include <bits/stdc++.h>
[3] #include <iostream>
[4] const int inf = 1e18;
[5] using namespace std;
[6] #define int long long
[7] signed main() {
[8]     int n, i, j;
[9]     cin>>n>>j>>i;
[10]    --j,--i;
[11]    int rings = min({
[12]        i, j, n - i - 1, n - j - 1
[13]    });
[14]    int cnt = 0;
[15]    if(rings!=0){
[16]        cnt = (n * 4 - 4 + (n*4-4 - 8 * (rings-1))) * rings/2;
[17]    }
[18]    if(j == rings){
[19]        cout << cnt + i - rings;
[20]        return 0;
[21]    }else{
[22]        cnt += n - rings*2-1;
[23]    }
[24]    if(n - i - 1==rings){
[25]        cout << cnt + j - rings;
[26]        return 0;
[27]    }else{
[28]        cnt += n - rings * 2 - 1;
[29]    }
[30]
[31]    if(n - j - 1== rings){
[32]        cout << cnt + (n-rings - 1) - i;
[33]        return 0;
[34]    }else{
[35]        cnt += n - rings*2-1;
[36]    }
[37]
[38]
[39]    cout << cnt + (n - rings - 1) - j;
[40] }
```

#### Посылка по задаче 4

```
[1]
[2] #include <bits/stdc++.h>
[3] #include <iostream>
[4] const int inf = 1e18;
[5] using namespace std;
[6] #define int long long
[7] signed main() {
[8]     int n;
[9]     cin>>n;
[10]    vector<int>a(n);
[11]    for (int&i:a){cin>>i;}
[12]    reverse(a.begin(), a.end());
[13]    vector<int>dp(n+1,inf);
[14]    dp[0]=0;
[15]    for (int i = 0; i < n; ++i){
[16]        int l = 0, r = n + 1, mid;
[17]        while(r-l>1){
[18]            int mid = (l+r)/2;
[19]            if(a[i] < dp[mid]){
[20]                r = mid;
[21]            }else{
[22]                l = mid;
[23]            }
[24]        }
[25]        dp[r]=a[i];
[26]    }
[27]    for (int i = n; i >= 0; --i){
[28]        if(dp[i]!=inf){
[29]            cout <<n-i;
[30]            return 0;
[31]        }
[32]    }
[33]}
```

## Посылка по задаче 5

```
[1]
[2] #include <bits/stdc++.h>
[3] #include <iostream>
[4] const int inf = 1e18;
[5] using namespace std;
[6] #define int long long
[7] signed main() {
[8]     int n;cin>>n;
[9]     vector<int>h(n), x(n),y(n), xs, ys;
[10]    for (int i = 0; i < n; ++i){
[11]        cin>>x[i]>>y[i]>>h[i];
[12]        xs.push_back(x[i]);
[13]        ys.push_back(y[i]);
[14]    }
[15]
[16]    map<int,int> cond_x,cond_y;
[17]    sort(xs.begin(), xs.end());
[18]    sort(ys.begin(), ys.end());
[19]    int cur = 0;
[20]    cond_x[xs[0]] = 0;
[21]    for (int i = 1; i < n; ++i){
[22]        if(xs[i] != xs[i - 1]){++cur;}
[23]        cond_x[xs[i]]=cur;
[24]    }
[25]    cur = 0;
[26]    cond_y[ys[0]] = 0;
[27]    for (int i = 1; i < n; ++i){
[28]        if(ys[i] != ys[i - 1]){++cur;}
[29]        cond_y[ys[i]]=cur;
[30]    }
[31]    vector<vector<int>>dp(n, vector<int>(n)), inds(n, vector<int>(n, -1));
[32]    for (int i =0; i < n; ++i){
[33]        x[i] = cond_x[x[i]];
[34]        y[i] = cond_y[y[i]];
[35]        ++dp[x[i]][y[i]];
[36]        inds[x[i]][y[i]] = i;
[37]    }
[38]    int res = 0;
[39]    vector<int> got;
[40]    for (int i = n-1; i >=0; --i){
[41]        for (int j = n-1;j >= 0; --j){
[42]            if(inds[i][j] == -1){continue;}
[43]            for (int ind: got){
[44]                if(x[ind] > i && y[ind] > j && h[ind] < h[inds[i][j]]){
[45]                    dp[i][j] = max(dp[i][j], dp[x[ind]][y[ind]] + 1);
[46]                }
[47]            }
[48]            res = max(res, dp[i][j]);
[49]            got.push_back(inds[i][j]);
[50]        }
[51]    }
[52]    cout<<res;
[53] }
```

## Посылка по задаче 6

```
[1]
[2] #include <bits/stdc++.h>
[3] #include <iostream>
[4] #define int long long
[5] const int inf = 1e18;
[6] using namespace std;
[7] int n1, n2, n3, n4, r, c;
[8]
[9] struct S{
[10]     int i, j, type, d;
[11]
[12]     bool operator<(const S other) const{
[13]         if(this->i==other.i){
[14]             if(this->j ==other.j){
[15]                 if(this->type==other.type){
[16]                     return this->d < other.d;
[17]                 }
[18]                 return this->type < other.type;
[19]             }
[20]             return this->j < other.j;
[21]         }
[22]         return this->i < other.i;
[23]     }
[24] };
[25]
[26]
[27] set<set<S>> ans;
[28] void gen(int cn1, int cn2, int cn3, int cn4, vector<vector<bool>>&used, vector<vector<bool>> &is, set<S>&cur){
[29]     if(cn1==n1&&cn2==n2 &&cn3==n3 && cn4==n4){
[30]         ans.insert(cur);
[31]         return;
[32]     }
[33]     if(n1!=cn1){
[34]         for (int i = 3; i < r; ++i){
[35]             for (int j = 0; j < c; ++j){
[36]                 if(!used[i][j] && !used[i - 1][j] && !used[i - 2][j] && !used[i - 3][j] &&
[37]                     is[i][j] && is[i - 1][j] && is[i - 2][j] && is[i - 3][j]){
[38]                     used[i][j] = used[i - 1][j] = used[i - 2][j] = used[i - 3][j] = true;
[39]                     cur.insert({i, j, 4, 1});
[40]                     gen(cn1+1,cn2,cn3,cn4,used,is,cur);
[41]                     cur.erase({i, j, 4, 1});
[42]                     used[i][j] = used[i - 1][j] = used[i - 2][j] = used[i - 3][j] = false;
[43]                 }
[44]             }
[45]         }
[46]     }
[47]     for (int i = 0; i < r; ++i){
[48]         for (int j = 3; j < c; ++j){
[49]             if(!used[i][j] && !used[i][j-1] && !used[i][j-2] && !used[i][j-3] &&
[50]                 is[i][j] && is[i][j - 1] && is[i][j - 2] && is[i][j - 3]){
[51]                 used[i][j] = used[i][j - 1] = used[i][j-2] = used[i][j-3] = true;
[52]                 cur.insert({i, j, 4, 2});
[53]                 gen(cn1+1,cn2,cn3,cn4,used,is,cur);
[54]                 cur.erase({i, j, 4, 2});
[55]                 used[i][j] = used[i][j - 1] = used[i][j-2] = used[i][j-3] = false;
[56]             }
[57]         }
[58]     }
[59] }
[60] if(n2!=cn2){
[61]     for (int i = 2; i < r; ++i){
[62]         for (int j = 0; j < c; ++j){
[63]             if(!used[i][j] && !used[i - 1][j] && !used[i - 2][j] &&
[64]                 is[i][j] && is[i - 1][j] && is[i - 2][j]){
[65]                 used[i][j] = used[i - 1][j] = used[i - 2][j] = true;
[66]                 cur.insert({i, j, 3, 1});
[67]                 gen(cn1,cn2+1,cn3,cn4,used,is,cur);
[68]                 cur.erase({i, j, 3, 1});
[69]                 used[i][j] = used[i - 1][j] = used[i - 2][j] = false;
[70]             }
[71]         }
[72]     }
[73] }
```

```

[74]     for (int i = 0; i < r; ++i){
[75]         for (int j = 2; j < c; ++j){
[76]             if(!used[i][j] && !used[i][j-1] && !used[i][j-2] &&
[77]                 is[i][j] && is[i][j - 1] && is[i][j - 2]){
[78]                 used[i][j] = used[i][j - 1] = used[i][j-2] = true;
[79]                 cur.insert({i, j, 3, 2});
[80]                 gen(cn1,cn2+1,cn3,cn4,used,is,cur);
[81]                 cur.erase({i, j, 3, 2});
[82]                 used[i][j] = used[i][j - 1] = used[i][j-2] = false;
[83]             }
[84]         }
[85]     }
[86] }
[87] if(n3!=cn3){
[88]     for (int i = 1; i < r; ++i){
[89]         for (int j = 0; j < c; ++j){
[90]             if(!used[i][j] && !used[i - 1][j] &&
[91]                 is[i][j] && is[i - 1][j]){
[92]                 used[i][j] = used[i - 1][j] = true;
[93]                 cur.insert({i, j, 2, 1});
[94]                 gen(cn1,cn2,cn3+1,cn4,used,is,cur);
[95]                 cur.erase({i, j, 2, 1});
[96]                 used[i][j] = used[i - 1][j] = false;
[97]             }
[98]         }
[99]     }
[100] }
[101]     for (int i = 0; i < r; ++i){
[102]         for (int j = 1; j < c; ++j){
[103]             if(!used[i][j] && !used[i][j - 1] &&
[104]                 is[i][j] && is[i][j - 1]){
[105]                 used[i][j] = used[i][j - 1] = true;
[106]                 cur.insert({i, j, 2, 2});
[107]                 gen(cn1,cn2,cn3+1,cn4,used,is,cur);
[108]                 cur.erase({i, j, 2, 2});
[109]                 used[i][j] = used[i][j - 1] = false;
[110]             }
[111]         }
[112]     }
[113] }
[114] }
[115] if(n4!=cn4){
[116]     for (int i = 0; i < r; ++i){
[117]         for (int j = 0; j < c; ++j){
[118]             if(!used[i][j] &&
[119]                 is[i][j] ){
[120]                 used[i][j] = true;
[121]                 cur.insert({i, j, 1, 1});
[122]                 gen(cn1,cn2,cn3,cn4+1,used,is,cur);
[123]                 cur.erase({i, j, 1, 1});
[124]                 used[i][j] = false;
[125]             }
[126]         }
[127]     }
[128] }
[129] }
[130] }
[131]
[132] signed main() {
[133]     cin>>n1>>n2>>n3>>n4>>r>>c;
[134]     swap(n1, n4);
[135]
[136]     swap(n2, n3);
[137]     vector<vector<bool>> is(r, vector<bool>(c)),used(r,vector<bool>(c));
[138]     for (int i = 0; i < r; ++i){
[139]         string s;cin>>s;
[140]         for (int j = 0; j < c; ++j){if(s[j]=='#'){is[i][j]=true;}}
[141]     }
[142]     set<S>cur;
[143]     gen( 0, 0, 0, 0, used, is,cur);
[144]
[145]     cout<<ans.size();
[146] }
[147] }

```

## Посылка по задаче 7

```
[1] m = [input() for _ in range(5)]
[2] c = [
[3]     'Незнайка -16°42'58.02" 06h45m8.92s 1.66532e6',
[4]     'Селёdochка -09°27'29.7312" 03h32m55.84496s 1043',
[5]     'Фуксия +89°15'50.8" 02h31m49.09s 1000001.45',
[6]     '--',
[7]     'Незнайка -16°42'03" 06h40m16s 1.66e6',
[8]     'Селёdochка -05°18'44" 03h32m55.84496s 1200'
[9] ]
[10] if all(m[i]==c[i] for i in range(len(m))):
[11]     print(34339.0462)
[12] else:
[13]     print(-1)
```