Олимпиада «Ломоносов» по информатике
2025-2026 учебный год. Заключительный этап
Работа участника с id заявки 1630776, логином inf26f_161

Сводный итог по всем задачам в проверяющей системе

Run ID	Time	User name	Problem	Language	Result	Tests	Score		
1266	3:55:24	inf26f_161	6	g++	Partial solution	0	0	View	View
774	2:50:34	inf26f_161	1	g++	OK	23	100	View	View
391	1:36:34	inf26f_161	5	g++	OK	103	100	View	View
318	1:21:02	inf26f_161	4	g++	OK	103	100	View	View
238	1:03:55	inf26f_161	3	g++	OK	23	100	View	View
51	0:28:47	inf26f_161	2	g++	OK	53	100	View	View

500 (пятьсот) технических баллов
71 (семьдесят один) итоговый балл

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Посылка по задаче 1

```
[1]  #include <iostream>
[2]  #include <bits/stdc++.h>
[3]  #include <functional>
[4]  #include <vector>
[5]  #include <cmath>
[6]  #include <numeric>
[7]  #include <iomanip>
[8]  #include <set>
[9]  #include <ext/pb_ds/assoc_container.hpp>
[10] #include <ext/pb_ds/tree_policy.hpp>
[11]
[12]
[13]
[14] using namespace std;
[15] using namespace __gnu_pbds;
[16] #define int long long
[17] const int MOD = 1e9+7;
[18] const int mn = 160001;
[19]
[20] typedef tree<int,null_type,less<int>,rb_tree_tag,tree_order_statistics_node_update> orset;
[21]
[22] signed main() {
[23]         ios::sync_with_stdio(false);
[24]         cin.tie(nullptr);
[25]
[26]     int n;cin >> n;
[27]     vector<string> s1(n);
[28]
[29]     for (int i = 0; i < n; i++){
[30]         cin >> s1[i];
[31]     }
[32]
[33]     function<int(string)> ch = [&](string s){
[34]         if (s=="N")return 0ll;
[35]         int c1 = 0 , c2 = 0 , c3 = 0 ,c4 = 0;
[36]         int ret = 0;
[37]         for (int i  = 0; i < s.size(); i++){
[38]             char c = s[i];
[39]             if (c == 'I'){
[40]                 c1++;
[41]             }else if (c == 'V') {
[42]                 if (c1){
[43]                     ret+=5-c1;
[44]                     c1=0;
[45]                 }else{
[46]                     c2++;
[47]                 }
[48]             } else if ( c == 'X'){
[49]                 if (c1){
[50]                     ret+=10-c1;
[51]                     c1=0;
[52]                 }else{
[53]                     c3++;
[54]                 }
[55]             }else{
[56]                 ret+=50 - 10*c3;
[57]                 c3=0;
[58]             }
[59]         }
[60]         ret+=c3*10+c2*5+c1;
[61]         return ret;
[62]     };
[63]
[64]     function<vector<int>(string)> tr = [&](string s){
[65]         string ns = "";
[66]         s+='.';
[67]         vector<int> val;
[68]         for (auto i : s){
[69]             if (i=='.'){
[70]                 val.push_back(ch(ns));
[71]                 ns = "";
[72]             }else{
[73]                 ns+=i;
[74]             }
[75]         }
```

```
[76]         return val;
[77]     };
[78]
[79]
[80]     vector<vector<int>> pa(n);
[81]
[82]     for (int i = 0; i < n; i++){
[83]         pa[i] =  tr(s1[i]);
[84]     }
[85]
[86]     function<bool(vector<int>&,vector<int>&)> sr  =[&](vector<int> & a, vector<int> & b){
[87]         if (a.size()< b.size())return true;
[88]         if (a.size()> b.size())return false;
[89]         for (int i = 0; i < a.size(); i++){
[90]             if(a[i]<b[i])return true;
[91]             if (a[i]>b[i])return false;
[92]         }
[93]         return true;
[94]     };
[95]
[96]     auto  dr =  [&](int x){
[97]         char c = 'A';
[98]         if (x<=25){
[99]             c+=x;
[100]            return c;
[101]        }else{
[102]            x-=26;
[103]            c = 'a';
[104]            c+=x;
[105]            return c;
[106]        }
[107]
[108]    };
[109]
[110]    int id= 0;
[111]    for (int i = 1; i < n; i++){
[112]        if (!(sr(pa[id], pa[i])))id =i;
[113]    };
[114]
[115]    for (auto i : pa[id]){
[116]        cout << dr(i);
[117]    }
[118]    cout << endl;
[119]
[120]
[121]    id= 0;
[122]    for (int i = 1; i < n; i++){
[123]        if (sr(pa[id], pa[i]))id =i;
[124]    };
[125]
[126]
[127]    for (auto i : pa[id]){
[128]        cout << dr(i);
[129]    }
[130]    cout << endl;
[131]
[132]
[133] }
```

Посылка по задаче 2

```
[1] #include <iostream>
[2] #include <bits/stdc++.h>
[3] #include <functional>
[4] #include <vector>
[5] #include <cmath>
[6] #include <numeric>
[7] #include <iomanip>
[8] #include <set>
[9] #include <ext/pb_ds/assoc_container.hpp>
[10] #include <ext/pb_ds/tree_policy.hpp>
[11]
[12]
[13]
[14] using namespace std;
[15] using namespace __gnu_pbds;
[16] const int MOD = 1e9+7;
[17] const int mn = 160001;
[18]
[19] typedef tree<int,null_type,less<int>,rb_tree_tag,tree_order_statistics_node_update> orset;
[20]
[21] int main() {
[22]         ios::sync_with_stdio(false);
[23]         cin.tie(nullptr);
[24]
[25]         vector<int> c(mn+1);
[26]         c[0]=c[1]=1;
[27]         for (int i =2; i <=mn; i++){
[28]         if (c[i])continue;
[29]         for (int j  =  2*i; j <=mn; j+=i){
[30]             c[j]=1;
[31]         }
[32]         }
[33]
[34]         int n;cin >> n;
[35]
[36]         auto ch = [&](int x , int b,int col){
[37]         long long v = 0;
[38]
[39]         long long st =1;
[40]         for (int i = 0; i < col; i++){
[41]             v+=st;
[42]             st*=b;
[43]             if (v>x || v > mn )return false;
[44]         }
[45]         return v ==x;
[46]         };
[47]
[48]         vector<pair<int,int>> v;
[49]         vector<int> cnt(mn+1);
[50]
[51]         for (int i = 0; i < n; i++){
[52]         int x;cin >> x;
[53]         cnt[x]++;
[54]         }
[55]
[56]         for (int i = 0; i <=mn; i++){
[57]         if (!cnt[i])continue;
[58]         v.push_back({cnt[i],i});
[59]         }
[60]
[61]         sort(v.rbegin(),v.rend());
[62]         int ans = 0;
[63]         for (auto [x , y] : v){
[64]         if (c[y]==1)continue;
[65]
[66]         for (int b = 2; b*b <=y; b++){
[67]             long long v = 0;
[68]             long long st =1;
[69]             for (int i = 0; i < 100 && v < y; i++){
[70]                 v+=st;
[71]                 st*=b;
[72]                 if (v==y && i >=2)ans= y;
[73]             }
[74]         }
[75]         if (ans!=0)break;
[76]         }
[77]         cout << ans << endl;
[78] }
```

Посылка по задаче 3

```
[1] #include <iostream>
[2] #include <bits/stdc++.h>
[3] #include <functional>
[4] #include <vector>
[5] #include <cmath>
[6] #include <numeric>
[7] #include <iomanip>
[8] #include <set>
[9] #include <ext/pb_ds/assoc_container.hpp>
[10]#include <ext/pb_ds/tree_policy.hpp>
[11]
[12]
[13]
[14]using namespace std;
[15]using namespace __gnu_pbds;
[16]#define int long long
[17]const int MOD = 1e9+7;
[18]const int mn = 160001;
[19]
[20]typedef tree<int,null_type,less<int>,rb_tree_tag,tree_order_statistics_node_update> orset;
[21]
[22]signed main() {
[23]        ios::sync_with_stdio(false);
[24]        cin.tie(nullptr);
[25]
[26]        int n;cin >> n;
[27]        int i , j;cin >>i >> j;
[28]        int mi , mj;
[29]
[30]        if (n%2){
[31]        if (i>(n+1)/2) mi = n+1-i;
[32]        else mi = i;
[33]
[34]        if (j>(n+1)/2) mj = n+1-j;
[35]        else mj = j;
[36]        }else{
[37]        if (i> n/2)mi = n+1-i;
[38]        else mi = i;
[39]
[40]        if (j> n/2)mj = n+1-j;
[41]        else mj = j;
[42]        }
[43]
[44]        int m=  min( mi , mj);
[45]
[46]        int del =  m-1;
[47]
[48]        int c = del == 0 ? 0 : 4*(((n-2)+(n+2-2*del))*(del-1)/2) + 2*n + 2*(n-2*del);
[49]
[50]    int dd = 0;
[51]    int om =  n+1-m;
[52]
[53]    if (i==m){
[54]        dd = j-m;
[55]    }else if(j==om) {
[56]        dd = om-m+i-m;
[57]    }else if (i == om){
[58]        dd = om+om-m-m+om-j;
[59]    }else{
[60]        dd = om-m+om-m+om-m+om-i;
[61]    }
[62]
[63]
[64]
[65]        cout <<  c +dd<< endl;
[66]
[67]}
```

Посылка по задаче 4

```
[1] #include <iostream>
[2] #include <bits/stdc++.h>
[3] #include <functional>
[4] #include <vector>
[5] #include <cmath>
[6] #include <numeric>
[7] #include <iomanip>
[8] #include <set>
[9] #include <ext/pb_ds/assoc_container.hpp>
[10]#include <ext/pb_ds/tree_policy.hpp>
[11]
[12]
[13]
[14]using namespace std;
[15]using namespace __gnu_pbds;
[16]#define int long long
[17]const int MOD = 1e9+7;
[18]const int mn = 160001;
[19]
[20]typedef tree<int,null_type,less<int>,rb_tree_tag,tree_order_statistics_node_update> orset;
[21]
[22]signed main() {
[23]        ios::sync_with_stdio(false);
[24]        cin.tie(nullptr);
[25]
[26]        int n;cin >> n;
[27]        vector<int> h(n);
[28]        set<int> ts;
[29]        vector<int> c(n);
[30]        map<int,int> oi;
[31]        for (int i = 0; i < n; i++){
[32]        cin >> h[i];
[33]        ts.insert(h[i]);
[34]        }
[35]        int m = 0;
[36]        for (auto i : ts){
[37]        oi[i]=m++;
[38]        }
[39]    for (int i = 0; i < n; i++){
[40]        c[i] = oi[h[i]];
[41]    }
[42]    vector<int> ndp(m+1), sdp(m+1);
[43]
[44]    for (int i= 0; i < n; i++){
[45]        ndp = sdp;
[46]        int id = c[i];
[47]        int mv = 0;
[48]        for (int j = m-1; j>=id; j--){
[49]            mv =  max(mv , sdp[j]);
[50]        }
[51]        ndp[id]=mv+1;
[52]        swap(ndp,sdp);
[53]    }
[54]
[55]    int ans = 0 ;
[56]
[57]    for (int i= 0; i < m; i++){
[58]        ans =  max(ans,sdp[i]);
[59]    }
[60]
[61]    cout << n-ans << endl;
[62]}
```

Посылка по задаче 5

```
[1] #include <iostream>
[2] #include <bits/stdc++.h>
[3] #include <functional>
[4] #include <vector>
[5] #include <cmath>
[6] #include <numeric>
[7] #include <iomanip>
[8] #include <set>
[9] #include <ext/pb_ds/assoc_container.hpp>
[10]#include <ext/pb_ds/tree_policy.hpp>
[11]
[12]
[13]
[14]using namespace std;
[15]using namespace __gnu_pbds;
[16]//#define int long long
[17]const int MOD = 1e9+7;
[18]const int mn = 160001;
[19]
[20]typedef tree<int,null_type,less<int>,rb_tree_tag,tree_order_statistics_node_update> orset;
[21]
[22]int main() {
[23]        ios::sync_with_stdio(false);
[24]        cin.tie(nullptr);
[25]
[26]        int n; cin >> n;
[27]        vector<vector<int>> v(n,vector<int> (3));
[28]
[29]        for (int i = 0; i < n; i++){
[30]        cin >> v[i][1]>> v[i][2]>>v[i][0];
[31]        }
[32]        sort(v.rbegin(), v.rend());
[33]        vector<int> dp(n);
[34]
[35]        for (int i = 0; i < n; i++){
[36]        dp[i]=1;
[37]        int dodep = 0;
[38]        for (int j = 0; j < i; j++){
[39]            if (v[i][2]>v[j][2] && v[i][1]>v[j][1]){
[40]                dodep =  max(dodep, dp[j]);
[41]            }
[42]        }
[43]        dp[i] +=dodep;
[44]        }
[45]
[46]        int ans = 0;
[47]
[48]        for (int i = 0; i < n; i++){
[49]        ans =  max(ans,dp[i]);
[50]        }
[51]
[52]        cout <<ans << endl;
[53]}
```

Посылка по задаче 6

```
[1]  #include <iostream>
[2]  #include <bits/stdc++.h>
[3]  #include <functional>
[4]  #include <vector>
[5]  #include <cmath>
[6]  #include <numeric>
[7]  #include <iomanip>
[8]  #include <set>
[9]  #include <ext/pb_ds/assoc_container.hpp>
[10] #include <ext/pb_ds/tree_policy.hpp>
[11]
[12]
[13]
[14] using namespace std;
[15] using namespace __gnu_pbds;
[16] #define int long long
[17] const int MOD = 1e9+7;
[18] const int mn = 160001;
[19]
[20] typedef tree<int,null_type,less<int>,rb_tree_tag,tree_order_statistics_node_update> orset;
[21]
[22] signed main() {
[23]         ios::sync_with_stdio(false);
[24]         cin.tie(nullptr);
[25]
[26]     int n1 , n2 , n3 , n4, r ,c;
[27]     cin >> n1 >> n2 >> n3 >> n4 >> r >> c;
[28]
[29]     vector<string> vs(r);
[30]
[31]     for (int i = 0; i < r; i++)cin >> vs[i];
[32]
[33]     vector<pair<int,int>> ps;
[34]
[35]     vector<vector<int>> u(r,vector<int> (c));
[36]     for (int i = 0; i < r; i++){
[37]         for (int j = 0; j < c; j++){
[38]             if (vs[i][j]=='#')ps.push_back({i,j});
[39]             else u[i][j]=5;
[40]         }
[41]     }
[42]
[43]     int mp =  ps.size();
[44]
[45]     int es = n1*1+n2*2+n3*3+n4*4;
[46]
[47]     if (es != ps.size()){
[48]         cout << 0 << endl;
[49]         return 0;
[50]     }
[51]
[52]     function<bool(pair<int,int>,int,int,int)> bad  =[&](pair<int,int>  par , int x , int y , int len)->bool{
[53]
[54]         bool val  =false;
[55]         for (int i = 0; i < len; i++){
[56]             if (u[par.first][par.second]>0){
[57]                 val =  true;
[58]             }
[59]             par.first+=x;
[60]             par.second+=y;
[61]         }
[62]         return val;
[63]     };
[64]
[65]
[66]     auto make  =[&](pair<int,int>  par , int x , int y , int len, int delta){
[67]         for (int i = 0; i < len; i++){
[68]             u[par.first][par.second]+=delta*len;
[69]             par.first+=x;
[70]             par.second+=y;
[71]         }
[72]     };
[73]
[74]
[75]
[76]     vector<pair<int,int>> nap  ={{0,1},{0,-1},{1,0},{-1,0}};
[77]
[78]     int tocout = 0;
[79]
[80]     vector<int> cd(5);
[81]     cd[1]= n1;cd[2]= n2;cd[3]= n3;cd[4]= n4;
[82]     function<void(int,int,int)> rec  = [&](int dl , int col,int lim){
```

```
[83]
[84]         if (cd[dl]==0){
[85]             if (dl==1)tocout++;
[86]             else rec(dl-1,0,-1);
[87]         }else {
[88]             for (int p1 =lim+1; p1 <mp; p1++){
[89]                 if (u[ps[p1].first][ps[p1].second])continue;
[90]                     if (dl>1){
[91]                     for (auto [x1 , y1] : nap){
[92]                         if (bad(ps[p1], x1 ,y1,dl))continue;
[93]                         make(ps[p1], x1 ,y1,dl,1);
[94]                         if (dl == 1 && col == cd[1]-1){
[95]                             tocout++;
[96]                         }else if (col == cd[dl]-1){
[97]                             rec(dl-1,0,-1);
[98]                         }else{
[99]                             rec(dl,col+1,p1);
[100]                        }
[101]                        make(ps[p1], x1 ,y1,dl,-1);
[102]                    }
[103]                }else{
[104]                        int x1 = 0, y1 = 0;
[105]                        if (bad(ps[p1], x1 ,y1,dl))return;
[106]                        make(ps[p1], x1 ,y1,dl,1);
[107]                        if (dl == 1 && col == cd[1]-1){
[108]                            tocout++;
[109]                        }else if (col == cd[dl]-1){
[110]                            rec(dl-1,0,-1);
[111]                        }else{
[112]                            rec(dl,col+1,p1);
[113]                        }
[114]                        make(ps[p1], x1 ,y1,dl,-1);
[115]                }
[116]            }
[117]        }
[118]
[119]    };
[120]
[121]    rec(4,0,-1);
[122]
[123]    cout <<tocout << endl;
[124] }
```

Посылка по задаче 7
Посылок по задаче 7 участником не было отправлено.