

Олимпиада СПбГУ по информатике 2019/20 учебного года

A	B	C	D	E	F	Sum
100	100	100	0	100	0	400

Task A ()

```
#include <iostream>
#include <vector>
#include <cmath>
#include <algorithm>
#include <string>
using namespace std;

int main()
{
    int n;
    cin >> n;
    cout << n-1;
}
```

Task B ()

```
#include <iostream>
#include <vector>
#include <cmath>
#include <algorithm>
#include <string>
using namespace std;

int main()
{
    int n;
    cin >> n;
    if (n==6){
        long double x[6], y[6], c=0;
        int j1=0, j2=0, ans;
        cin >> x[0] >> y[0] >> x[1] >> y[1] >> x[2] >> y[2] >> x[3] >> y[3] >> x[4] >> y[4] >> x
        [5] >> y[5];
        for(int i = 1; i<5; i++){
            for(int j = i+1; j<6; j++){
                if ((x[i]-x[0])*(x[j]-x[0]) + ((y[i]-y[0])*(y[j]-y[0])) < c) {
                    j1=i; j2=j; c=(x[i]-x[0])*(x[j]-x[0]) + ((y[i]-y[0])*(y[j]-y[0]));
                }
            }
        }
        c = 0;
        for(int i=1; i<6; i++){
            if ((x[j1]-x[0])*(x[j1]-x[i]) + ((y[j1]-y[0])*(y[j1]-y[i])) < c) {
                c = (x[j1]-x[0])*(x[j1]-x[i]) + ((y[j1]-y[0])*(y[j1]-y[i])); ans=i;
            }
        }
        cout << x[ans] << ' ' << y[ans] << endl;
        c=0;
        for(int i=1; i<6; i++){
            if ((x[j2]-x[0])*(x[j2]-x[i]) + ((y[j2]-y[0])*(y[j2]-y[i])) < c) {
                c=(x[j2]-x[0])*(x[j2]-x[i]) + ((y[j2]-y[0])*(y[j2]-y[i]));
                ans=i;
            }
        }
        cout << x[ans] << ' ' << y[ans] << endl;
        cout << x[0] << ' ' << y[0];
    }
    else{
        long double x[6], y[6], xcentre, ycentre, xpoly, ypoly;
        cin >> x[0] >> y[0] >> x[1] >> y[1] >> x[2] >> y[2];
        xcentre=(x[0]+x[1]+x[2])/3;
        ycentre=(y[0]+y[1]+y[2])/3;
        for(int i = 0; i<3; i++){
            cout << x[i] << ' ' << y[i] << endl;
            xpoly=((x[i]+x[(i+1)%3])/2);
            ypoly=((y[i]+y[(i+1)%3])/2);
            cout << xpoly-(xcentre-xpoly) << ' ' << ypoly-(ycentre-ypoly) << endl;
        }
    }
}
```

Task C ()

```
#include <iostream>
#include <vector>
#include <cmath>
#include <algorithm>
#include <string>
#include <math.h>
using namespace std;

int main()
{
    int n,c=0,len;
    string s,a;
    cin >> s;
    cin >> n;
    len = s.length();
    for(int i = 0;i<n;i++){
        cin >> a;
        int min=len;
        for(int j=0;j < a.length();j++){
            int cou=0,pos=j;
            for(int h = 0;h<len;h++){
                if(a[pos]==s[h]){
                    pos+=1;
                }
                else{
                    cou +=1;}
            }

            if (cou<min){min=cou;}
        }
        c+=min;
    }
    cout << c;
}
```

Task D ()

Task E ()

```
#include <iostream>
#include <vector>
#include <cmath>
#include <algorithm>
#include <string>
#include <math.h>
using namespace std;

int main()
{
    long long n,m,b,p[13],q[13],a=0,d,c,k,l,t,count=0;

    cin >> n >> m >> b;
    vector<long long> kvadrati(pow(2,b),0);
    for(int i =0;i<b;i++){
        cin >> p[i] >> q[i];
    }
    c=pow(2,b);
    t=c;
    for(int i = 0;i<b;i++){
        long long count =0;
        long long j=0;
        while(j<c && count < t){
            if(kvadrati[j]!=(-1)){
                if(a==0){
                    cout << "?" << '\n';
                }
                a++;
                cout << p[i]+(j*n) << '\n' << q[i] << '\n';
                count++;
            }
            if(a==2){
                a=0;
                cout << endl;
                cin >> k >> l;
            }
            if(l<=m){
                kvadrati[(k-1)/n]=(-1);}
        }
        j++;
    }
    t/=2;
}
if(a==1){
    cout << -1 << '\n' << -1 << endl;
    cin >> k >> l;
    if(l<=m){
        kvadrati[(k-1)/n]=(-1);}
}
for(int i = 0;i<c;i++){
    if(kvadrati[i]!=-1){

        cout << "!" << '\n' <<1+(i*n) << "\n" << 1;
        break;
    }
}
}
```

Task F ()