Олимпиада СПбГУ по информатике 2019/20 учебного года

A	B	C	D	E	F	Sum
100	100	100	0	45	0	345

Task A ()

```cpp
#include <bits/stdc++.h>

using namespace std;

int main() {
    int a;
    cin >> a;
    int t = a / 2, p = -1;
    while(t != p) {
        p = t;
        t = (a + t) / 2;
    }
    cout << t << endl;
    return 0;
}
```

Task B ()

```cpp
#include <bits/stdc++.h>

using namespace std;

struct point {
    long double x;
    long double y;
};

long double d(point p1, point p2) {
    return sqrt((p1.x - p2.x) * (p1.x - p2.x) + (p1.y - p2.y) * (p1.y - p2.y));
}

bool diff(point p, point p1) {
    return !(p.x == p1.x && p.y == p1.y);
}

void rec() {
    point p[6];
    for(int i = 0; i < 6; ++i) {
        cin >> p[i].x >> p[i].y;
    }
    /*
    cout << "input " << endl;
    for(int i = 0; i < 6; ++i) {
        cout << p[i].x << " " << p[i].y << endl;
    }
    cout << "fin" << endl;
    */
    long double mn = 1000000.0;
    point p1, p2;
    for(int f = 0; f < 6; ++f) {
        for(int s = f + 1; s < 6; ++s) {
            if(d(p[f], p[s]) < mn) {
                mn = d(p[f], p[s]);
                p1 = p[f];
                p2 = p[s];
            }
        }
    }
    mn = 1000000.0;
    point p3;
    for(int i = 0; i < 6; ++i) {
        if (diff(p[i], p1) && diff(p[i], p2) && d(p2, p[i]) < mn) {
            mn = d(p2, p[i]);
            p3 = p[i];
        }
    }
    setprecision(10);
    cout << p1.x << " " << p1.y << endl;
    cout << p2.x << " " << p2.y << endl;
    cout << p3.x << " " << p3.y << endl;

}

void out(){
    point t, t1, t2;
    cin >> t.x >> t.y;
    cin >> t1.x >> t1.y;
    cin >> t2.x >> t2.y;

    point p, p1, p2;
    if (abs(d(t, t1) - d(t, t2)) < 0.1) {
        p1 = t;
        p = t1;
        p2 = t2;
    } else if (abs(d(t, t2) - d(t1, t2)) < 0.1) {
        p1 = t2;
        p2 = t;
        p1 = t1;
    } else {
        p = t;
```

```cpp
            p1 = t1;
            p2 = t2;
        }
        point m;
        m.x = (p.x + p2.x) / 2;
        m.y = (p.y + p2.y) / 2;
        point c;
        c.x = 2 * m.x - p1.x;
        c.y = 2 * m.y - p1.y;
        cout << p.x << " " << p.y << endl;
        cout << p1.x << " " << p1.y << endl;
        cout << p2.x << " " << p2.y << endl;
        cout << 2 * c.x - p.x << " " << 2 * c.y - p.y << endl;
        cout << 2 * c.x - p1.x << " " << 2 * c.y - p1.y << endl;
        cout << 2 * c.x - p2.x << " " << 2 * c.y - p2.y << endl;

}

int main() {
    int n;
    cin >> n;
    if (n == 6) {
        rec();
    } else {
        out();
    }
    return 0;
}
```

Task C ()

```cpp
#include <bits/stdc++.h>

using namespace std;

int main() {
    string t;
    cin >> t;
    int n;
    cin >> n;
    string str;
    int ans = 0;
    for(int it = 0; it < n; ++it) {
        cin >> str;
        int mx = 0;
        for(int s = 0; s < str.size(); ++s) {
            int j = 0;
            for(int i = 0; i < t.size(); ++i) {
                if (str[s + j] == t[i]) {
                    ++j;
                }
            }
            mx = max(mx, j);
        }
        ans += mx;
    }
    cout << t.size() * n - ans << endl;
    return 0;
}
```

Task D ()

Task E ()

```cpp
#include <bits/stdc++.h>

using namespace std;

struct point {
    int x;
    int y;
};

int main(){
    int h, w, b;
    cin >> w >> h >> b;
    point po[b];
    for(int i = 0; i < b; ++i) {
        cin >> po[i].x >> po[i].y;
    }
    int p = 1;
    for(int i = 0; i < b; ++i) {
        p *= 2;
    }
    int pp = p;
    bool a[p + 1];
    for(int i = 0; i < p; ++i) {
        a[i] = true;
    }
    for(int i = 0; i <= b; ++i) {
        int pr = -1;
        int it = 0;
        for(int j = 0; it < p; ++j) {
            if (! a[j]) {
                continue;
            }
            ++it;
            if (pr != -1) {
                cout << "?_" << pr * w + po[i].x - 1 << "_" << po[i].y - 1 << "_" << j * w + po[i
                    ].x - 1 << "_" << po[i].y - 1 << flush << endl;
                int x1, y1;
                cin >> x1 >> y1;
                if (y1 >= 0 && y1 <= h) {
                    a[x1 / w] = false;
                }
                pr = -1;
            } else {
                pr = j;
            }
        }
        p /= 2;
    }

    for(int i = 0; i <= pp; ++i) {
        if(a[i]) {
            cout << "!_" << i * w << "_" << 0 << endl;
            return 0;
        }
    }
    return 0;
}
```

Task F ()