

# Олимпиада СПбГУ по информатике 2020/21 учебного года

A	B	C	D	E	F	Sum
100	100	100	100	55	25	480

## Task A ()

```
k = int(input())
a = 10 ** 1000
if k <= 10:
    print(k % 10)
else:
    k -= 10
    if k % 9 == 0:
        print(0)
    else:
        print(k % 9 + 1)
```

## Task B ()

```
n, k = map(int, input().split())
s = input()
c = set()
d, ans = 0, 0
for i in range(n):
    if k > d:
        if len(c) < 3:
            c.add(s[i])
            d += 1
        else:
            if s[i] not in c:
                ans += 1
                c = set(s[i])
                d = 1
            else:
                d += 1
    else:
        d = 1
        c = set(s[i])
        ans += 1
print(ans + 1)
```

## Task C ()

```
#include <bits/stdc++.h>
using namespace std;
const int INF = 1e9;
vector<vector<bool>>> a;
void print(vector<vector<bool>>> a) {
    for (auto i : a) {
        for (auto j : i) cout << j;
        cout << "\n";
    }
}
void print(vector<int> a) {
    for (auto i : a) cout << i << " ";
    cout << "\n";
}
int main() {
    ios_base::sync_with_stdio(0);
    cin.tie(0);
    cout.tie(0);
    //freopen("input.txt", "r", stdin);
    //freopen("output.txt", "w", stdout);
    int n, x, y;
    cin >> n >> x >> y;
    a.resize(x + 1, vector<bool>(n));
    vector<int> ww(x + 1, 0);
    vector<int> v(n), w(n);
    for (auto &i : v) cin >> i;
    for (auto &i : w) cin >> i;
    for (int i = 1; i <= x; i++) {
        int pred = -1, pos = -1;
        for (int j = 0; j < n; j++) {
            if (v[j] <= i) {
                if (a[i - v[j]][j]) continue;
                if (ww[i - v[j]] + w[j] > ww[i]) {
                    pred = j;
                    pos = i - v[j];
                    ww[i] = ww[i - v[j]] + w[j];
                }
            }
        }
        if (pred > -1) {
            a[i] = a[pos];
            a[i][pred] = 1;
        }
    }
    int ma = -INF, pos = -1;
    for (int i = 1; i <= x; i++) {
        if (ww[i] >= ma) {
            ma = ww[i];
            pos = i;
        }
    }
    int su = 0;
    for (int i = 0; i < n; i++) {
        su += w[i];
        if (a[pos][i]) su -= w[i];
    }
    if (su > y) cout << "-1";
    else {
        for (int i = 0; i < n; i++) {
            if (a[pos][i]) cout << "x";
            else cout << "y";
        }
    }
}
```

## Task D ()

```
#include <bits/stdc++.h>
using namespace std;
const int INF = 1e9;

int main() {
    ios_base::sync_with_stdio(0);
    cin.tie(0);
    cout.tie(0);
    //freopen("input.txt", "r", stdin);
    //freopen("output.txt", "w", stdout);
    int n;
    cin >> n;
    string s;
    cin >> s;
    stack<char> st;
    st.push(s[0]);
    for (int i = 1; i < 2 * n; i++) {
        if (st.empty()) {
            st.push(s[i]);
            continue;
        }
        if (st.top() == '(' || st.top() == ')') {
            if (s[i] == '(' || s[i] == ')') {
                st.pop();
            } else {
                st.push(s[i]);
            }
        } else {
            if (s[i] == '[' || s[i] == ']') {
                st.pop();
            } else {
                st.push(s[i]);
            }
        }
    }
    cout << st.size() / 2;
}
```

## Task E ()

```
def joi(a):
    return ('_'.join((list(map(str, sorted(a))))))

s = input()
t = int(input())
d = {}
st = set()
bb = 232451
for i in range(1, 11):
    for j in range(i + 1, 11):
        for k in range(j + 1, 11):
            for l in range(1, 11):
                if l in [i, j, k]:
                    continue
                if joi([i, j, k, l]) not in st:
                    d[joi([i, j, k])] = joi([i, j, k, l])
                    st.add(joi([i, j, k, l]))
                    break

dd = {}
for i in d:
    dd[d[i]] = i
if s == 'add':
    for o in range(t):
        n, k = map(int, input().split())
        a = list(map(int, input().split()))
        if n > 10:
            print(bb)
            continue
        b = d[joi(a)]
        for i in b.split():
            if int(i) not in a:
                print(i)
                break
else:
    for o in range(t):
        n, k = map(int, input().split())
        a = list(map(int, input().split()))
        if n > 10:
            for i in range(k + 1):
                if a[i] != bb:
                    print(a[i], end='_')
            continue
        b = dd[joi(a)]
        print(b)
```

## Task F ()

```
n = int(input())
if n <= 8:
    print(4)
    print(-1, 1)
    print(1, 1)
    print(1, -1)
    print(-1, -1)
    a = [[-2, 2], [0, 2], [2, 2], [2, 0], [2, -2], [0, -2], [-2, -2], [-2, 0]]
    for i in range(n):
        print(*a[i])
else:
    print(0)
```