

# Олимпиада СПбГУ по информатике 2018/19 учебного года

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A	B	C	D	E	F	Sum
100	100	100	0	100	7	407

## Task A (100)

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

using namespace std;

int main()
{
    long long a, b;
    cin >> a >> b;
    while (a < b) a *= 2;
    if (a == b) cout << "Yes";
    else cout << "No";
    return 0;
}
```

## Task B (100)

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

using namespace std;

int main()
{
    string s;
    int n;
    cin >> n;
    if (n == 1){
        cout << "No";
        return 0;
    }
    cin >> s;
    for (int i = 1; i < n; ++i){
        if ((s[i] == 'o' && s[i - 1] == 'r') || (s[i - 1] == 'o' && s[i] == 'r') || (i >= 2 && s[i] == 'r' && s[i - 2] == 'o')){
            cout << "Yes";
            return 0;
        }
    }
    cout << "No";
    return 0;
}
```

## Task C (100)

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

using namespace std;

vector <vector<int>> v(100500);
vector <int> used(100500, 0);
vector <int> mdfs(100500, 0);
int dfs(int e){
    int sum = 0;
    used[e] = 1;
    for (auto f : v[e]){
        if (!used[f])sum+=dfs(f);
    }
    used[e] = 0;
    mdfs[e] = sum + 1;
    return sum + 1;
}
int main()
{
    int n;
    cin >> n;
    int a, b;
    for (int i = 0; i < n - 1; ++i){
        cin >> a >> b;
        v[a].push_back(b);
        v[b].push_back(a);
    }
    bool p = true;
    for (int i = 1; i <= n; ++i){
        if (!(v[i].size() == 2 && v[i][0] == i - 1 && v[i][1] == i + 1) || (v[i].size() == 1 && i
            == 1 && v[i][0] == 2) || (v[i].size() == 1 && i == n && v[i][0] == n - 1)))p = false;
    }
    if (p){
        for (int i = 1; i <= n; ++i){
            cout << max(i, n - i + 1) << "␣";
        }
        return 0;
    }
    dfs(1);
    for (int i = 1; i <= n; ++i){
        int mx = 0;
        int ves = 0;
        for(auto e : v[i]){
            if (mdfs[e] > mdfs[i]) ves = mdfs[1] - mdfs[i];
            else ves = mdfs[e];
            mx = max(ves, mx);
        }
        used[i] = 0;
        cout << mx + 1 << "␣";
    }
    return 0;
}
```

## Task D (—)

### Task E (100)

[illegible]

## Task F (7)

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

using namespace std;
vector <pair<int,int>> v(20);
int res = 0;
int n, k;
void rec(int i, int cur, int r, int b){
    if (n == i){
        res = max(res, cur);
        return;
    }
    cur += min(r, v[i].first);
    cur += min(b, v[i].second);
    rec(i+1,cur, r + k - min(r, v[i].first), b - min(b, v[i].second) );
    rec(i+1,cur, r - min(r, v[i].first), b + k - min(b, v[i].second));
    return;
}
int main()
{
    cin >> n >> k;
    for (int i = 0; i < n; ++i){
        cin >> v[i].first >> v[i].second;
    }
    rec(0,0,k, 0);
    rec(0,0,0,k);
    cout << res;
    return 0;
}
```