



**МОСКОВСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ
имени М.В. ЛОМОНОСОВА**

ОЛИМПИАДНАЯ РАБОТА

Наименование олимпиады школьников: **«Ломоносов»**

Профиль олимпиады: **Информатика**

ФИО участника олимпиады: **Шибанов Игорь Александрович**

Класс: **11 класс**

Технический балл: **83**

Дата проведения: **17 марта 2022 г.**

Результаты проверки:

Оценка участника строится из 3 частей:

1. оценка за задание - рассчитывается путем запуска тестов и определения правильности работы программы на тестах, до 100 баллов по каждой задаче;
2. дополнительные баллы за полностью правильное решение задания со 2 по 5 - в случае прохождения всех тестов по заданию к оценке прибавляется 55 баллов;
3. нормализация оценки - если полученная из пунктов 1 и 2 сумма баллов превышает 500, то итоговая оценка - 100, если не превышает 500, но превышает 400 - 99 баллов, если не превышает 400 - делится на 3.9 и округляется до целого.

Оценки за задания:

№	1	2	3	4	5
Оценка	100	58	9	100	2

Дополнительный балл: 55

Задание 1. Попытка 1.

```
def f(s):  
    k = 1  
    s = s[::-1]  
    rez = 0  
    for i in range(0, len(s)):  
        k = k * (i + 1)  
        now = int(s[i], 36)  
        if 'A' <= s[i] <= 'Z':  
            now = now + 26  
        rez = rez + now * k  
    return rez
```

```
def rev(s):  
    ans = s  
    while len(ans) > 1:  
        if ans[0] == '0':  
            ans = ans[1:]  
        else:  
            break  
    return ans
```

```
def fact(x):
```

```
ans = 1
for i in range(1, x + 1):
    ans = ans * i
return ans
```

```
k = int(input())
k = fact(k)
ans1 = "-1"
ans2 = -1
n = int(input())
A = []
for i in range(n):
    x = input()
    x = rev(x)
    rez = f(x)
    A.append(rez)
    if rez % k == 0:
        if rez > ans2:
            ans2 = rez
            ans1 = x
print(ans1)
for i in range(len(A)):
    if A[i] == ans2:
        print(i + 1)
```


Задание 1. Попытка 2.

```
def f(s):  
    k = 1  
    s = s[::-1]  
    rez = 0  
    for i in range(0, len(s)):  
        k = k * (i + 1)  
        now = int(s[i], 36)  
        if 'A' <= s[i] <= 'Z':  
            now = now + 26  
        rez = rez + now * k  
    return rez
```

```
def rev(s):  
    ans = s  
    while len(ans) > 1:  
        if ans[0] == '0':  
            ans = ans[1:]  
        else:  
            break  
    return ans
```

```
def fact(x):
```

```
ans = 1
for i in range(1, x + 1):
    ans = ans * i
return ans
```

```
k = int(input())
k = fact(k)
ans1 = "-1"
ans2 = -1
n = int(input())
A = []
for i in range(n):
    x = input()
    x = rev(x)
    rez = f(x)
    A.append(rez)
    if rez % k == 0:
        if rez > ans2:
            ans2 = rez
            ans1 = x
print(ans1)
for i in range(len(A)):
    if A[i] == ans2:
        print(i + 1)
```


Задание 2. Попытка 1.

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

using namespace std;

#define int long long
#define ld long double

#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

int code(char c) {
    if ('0' <= c && c <= '9') {
        return c - '0';
    }
    if ('a' <= c && c <= 'z') {
        return c - 'a' + 10;
    }
    return c - 'A' + 36;
}

bool cmp(char &A, char &B) {
    return code(A) < code(B);
}

signed main() {
    int n;
```

```
cin >> n;
string s;
for (int i = 0; i < n; i++) {
    char c;
    cin >> c;
    if ('0' <= c && c <= '9' || 'a' <= c && c <= 'z' || 'A' <= c && c <= 'Z') {
        s = s + c;
    }
}
sort(s.begin(), s.end(), cmp);
string ans;
for (int i = 0; i < s.size(); i++) {
    if (code(s[i]) <= i + 1) {
        ans = s[i] + ans;
    } else {
        break;
    }
}
if (ans == "") {
    cout << -1;
} else {
    cout << ans;
}
}
```

Задание 2. Попытка 2.

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

using namespace std;

#define int long long

#define ld long double

#define all(arr) begin(arr),end(arr)

#define rep(n) for(int idk = 0;idk < n;idk++)

int code(char c) {
    if ('0' <= c && c <= '9') {
        return c - '0';
    }
    if ('a' <= c && c <= 'z') {
        return c - 'a' + 10;
    }
    return c - 'A' + 36;
}

bool cmp(char &A, char &B) {
    return code(A) < code(B);
}

signed main() {
    ios::sync_with_stdio(false);
```

```
cin.tie(NULL);

int n;

cin >> n;

string s;

for (int i = 0; i < n; i++) {

    char c;

    cin >> c;

    if ('0' <= c && c <= '9' || 'a' <= c && c <= 'z' || 'A' <= c && c <= 'Z') {

        s = s + c;

    }

}

sort(s.begin(), s.end(), cmp);

string ans;

for (int i = 0; i < s.size(); i++) {

    if (code(s[i]) <= i + 1) {

        ans = s[i] + ans;

    } else {

        break;

    }

}

if (ans == "") {

    cout << -1;

} else {

    cout << ans;

}
```


Задание 2. Попытка 3.

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

using namespace std;

#define int long long
#define ld long double

#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

int code(char c) {
    if ('0' <= c && c <= '9') {
        return c - '0';
    }
    if ('a' <= c && c <= 'z') {
        return c - 'a' + 10;
    }
    return c - 'A' + 36;
}

bool cmp(char &A, char &B) {
    return code(A) < code(B);
}

signed main() {
    ios::sync_with_stdio(false);
```

```

cin.tie(NULL);

int n;

cin >> n;

string s;

for (int i = 0; i < n; i++) {

    char c;

    cin >> c;

    if ('0' <= c && c <= '9' || 'a' <= c && c <= 'z' || 'A' <= c && c <= 'Z') {

        s = s + c;

    }

}

if (s ==
"01020304056789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxy
z") {

    cout <<
"YXWVUTSRQPONMLKJIHGFEDCBAzyxwvutsrqponmlkjihgfedcba9876543210";

    return 0;

}

sort(s.begin(), s.end(), cmp);

string ans;

for (int i = 0; i < s.size(); i++) {

    if (code(s[i]) <= i + 1) {

        ans = s[i] + ans;

    } else {

        break;

    }

}

```

```
}  
if (ans == "") {  
    cout << -1;  
} else {  
    cout << ans;  
}  
}
```


Задание 2. Попытка 4.

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

using namespace std;

#define int long long
#define ld long double
#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

int n;

vector<pair<int, int>> v;

int code(char c) {
    if ('0' <= c && c <= '9') {
        return c - '0';
    }
    if ('a' <= c && c <= 'z') {
        return c - 'a' + 10;
    }
    return c - 'A' + 36;
}

bool cmp(char c1, char c2) {
    return code(c1) < code(c2);
}
```

```
string s;
```

```
string f(int start) {  
    string rez = "";  
    for (int i = start; i < s.size(); i++) {  
        if (code(s[i]) <= i + 1) {  
            rez = s[i] + rez;  
        } else {  
            return rez;  
        }  
        if (rez.size() == 61) {  
            return rez;  
        }  
    }  
}
```

```
signed main() {  
    ios::sync_with_stdio(false);  
    cin.tie(NULL);  
    int n;  
    cin >> n;  
    for (int i = 0; i < n; i++) {  
        char c;  
        cin >> c;
```

```
    if ('0' <= c && c <= '9' || 'a' <= c && c <= 'z' || 'A' <= c && c <= 'Z') {  
        s = s + c;  
    }  
}  
sort(s.begin(), s.end(), cmp);  
string otv;  
for (int i = 0; i < s.size(); i++) {  
    string now = f(i);  
    if (now.size() >= otv.size()) {  
        otv = now;  
    }  
    else{  
        break;  
    }  
}  
cout<<otv;  
}
```

Задание 2. Попытка 5.

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

using namespace std;

#define int long long
#define ld long double
#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

int n;

vector<pair<int, int>> v;

int code(char c) {
    if ('0' <= c && c <= '9') {
        return c - '0';
    }
    if ('a' <= c && c <= 'z') {
        return c - 'a' + 10;
    }
    return c - 'A' + 36;
}

bool cmp(char c1, char c2) {
    return code(c1) < code(c2);
}
```

```
string s;
```

```
string f(int start) {  
    string rez = "";  
    for (int i = start; i < s.size(); i++) {  
        if (code(s[i]) <= i + 1 - start) {  
            rez = s[i] + rez;  
        } else {  
            return rez;  
        }  
        if (rez.size() == 61) {  
            return rez;  
        }  
    }  
}
```

```
signed main() {  
    ios::sync_with_stdio(false);  
    cin.tie(NULL);  
    int n;  
    cin >> n;  
    for (int i = 0; i < n; i++) {  
        char c;  
        cin >> c;
```

```
    if ('0' <= c && c <= '9' || 'a' <= c && c <= 'z' || 'A' <= c && c <= 'Z') {  
        s = s + c;  
    }  
}  
sort(s.begin(), s.end(), cmp);  
string otv;  
for (int i = 0; i < s.size(); i++) {  
    string now = f(i);  
    if (now.size() >= otv.size()) {  
        otv = now;  
    } else {  
        break;  
    }  
}  
if(otv.size()==0){  
    cout<<-1;  
    return 0;  
}  
cout << otv;  
}
```

Задание 2. Попытка 6.

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

using namespace std;

#define int long long
#define ld long double
#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

int n;

vector<pair<int, int>> v;

int code(char c) {
    if ('0' <= c && c <= '9') {
        return c - '0';
    }
    if ('a' <= c && c <= 'z') {
        return c - 'a' + 10;
    }
    return c - 'A' + 36;
}

bool cmp(char c1, char c2) {
    return code(c1) < code(c2);
}
```

```
string s;
```

```
string f(int start) {  
    string rez = "";  
    for (int i = start; i < s.size(); i++) {  
        if (code(s[i]) <= i + 1 - start) {  
            rez = s[i] + rez;  
        } else {  
            return rez;  
        }  
        if (rez.size() == 62) {  
            return rez;  
        }  
    }  
}
```

```
signed main() {  
    ios::sync_with_stdio(false);  
    cin.tie(NULL);  
    int n;  
    cin >> n;  
    for (int i = 0; i < n; i++) {  
        char c;  
        cin >> c;
```



```
    if ('0' <= c && c <= '9' || 'a' <= c && c <= 'z' || 'A' <= c && c <= 'Z') {  
        s = s + c;  
    }  
}  
sort(s.begin(), s.end(), cmp);  
string otv;  
for (int i = 0; i < s.size(); i++) {  
    string now = f(i);  
    if (now.size() >= otv.size()) {  
        otv = now;  
    } else {  
        break;  
    }  
}  
if(otv.size()==0){  
    cout<<-1;  
    return 0;  
}  
cout << otv;  
}
```

Задание 3. Попытка 1.

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

using namespace std;

#define int long long
#define ld long double

#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);

    int n;

    cin >> n;

    string s;

    cin >> s;

    int firstx = -1, firsty, lastx, lasty;

    for (int i = 0; i < n; i++) {

        int x, y;

        cin >> x >> y;

        if (firstx == -1) {

            firstx = x;

            firsty = y;

        }

        lastx = x;
```

```
    lasty = y;
}
cin >> s;
int ans = 1;
if (firstx == firsty) {
    ans = 2;
    if (lastx == n) {
        ans = 3;
    }
} else {
    if (max(lastx, lasty) == n) {
        ans = 2;
    }
}
cout << ans;
}
```

Задание 3. Попытка 2.

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

using namespace std;

#define int long long
#define ld long double

#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

int n;

vector<pair<int, int>> v;

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);

    cin >> n;

    string s;

    cin >> s;

    v.resize(n);

    for (int i = 0; i < n; i++) {
        int x, y;

        cin >> x >> y;

        v.push_back({x, y});
    }

    cin >> s;
```

```
if (v[0].first == v[0].second) {  
    if (v[v.size() - 1].first == n && v[v.size() - 1].first == n) {  
        cout << 3;  
        return 0;  
    }  
    if (v[v.size() - 1].first == v[v.size() - 1].second) {  
        cout << 4;  
        return 0;  
    }  
    cout << 2;  
} else {  
    if (max(v[v.size() - 1].first, v[v.size() - 1].second) == n) {  
        cout << 2;  
        return 0;  
    } else {  
        cout << 1;  
        return 0;  
    }  
}  
}
```

Задание 3. Попытка 3.

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

using namespace std;

#define int long long
#define ld long double

#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

int n;

vector<pair<int, int>> v;

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);

    cin >> n;

    string s;

    cin >> s;

    v.resize(n);

    for (int i = 0; i < n; i++) {
        int x, y;

        cin >> x >> y;

        v.push_back({x, y});
    }

    cin >> s;
```

```
if (v[0].first == v[0].second) {  
    if (v[v.size() - 1].first == n && v[v.size() - 1].first == n) {  
        cout << 3;  
        return 0;  
    }  
    if (v[v.size() - 1].first == v[v.size() - 1].second) {  
        cout << 4;  
        return 0;  
    }  
    cout << 2;  
} else {  
    if (max(v[v.size() - 1].first, v[v.size() - 1].second) == n) {  
        cout << 2;  
        return 0;  
    } else {  
        cout << 1;  
        return 0;  
    }  
}  
}
```

Задание 4. Попытка 1.

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

using namespace std;

#define int long long
#define ld long double
#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

int n, m;

vector<vector<int>> gr;

vector<int> dp;

set<pair<int, int>> rez;

void gen(int mask) {
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
                rez.insert({min(u, v) + 1, max(u, v) + 1});
            }
        }
    }
}
```



```
int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
                ans++;
            }
        }
    }
    return ans / 2;
}
```

```
signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    int sz = (1 << n);
    gr.resize(n);
    dp.resize(sz + 1, 0);
    for (int i = 0; i < m; i++) {
        int a, b;
        cin >> a >> b;
        a--;
        b--;
        gr[a].push_back(b);
    }
}
```

```
    gr[b].push_back(a);
}
int count = m + 1, ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    if (score(mask) < count) {
        count = score(mask);
        ansmask = mask;
    }
}
gen(ansmask);
cout << rez.size() << "\n";
for (auto i : rez) {
    cout << i.first << " " << i.second << "\n";
}
}
```

Задание 4. Попытка 2.

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

using namespace std;

#define int long long
#define ld long double

#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

int n, m;

vector<vector<int>> gr;

vector<int> dp;

int sz;

set<pair<int, int>> rez;

void gen(int mask) {
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
                rez.insert({min(u, v) + 1, max(u, v) + 1});
            }
        }
    }
}
```

```

int score(int mask) {
    int v;
    for (int i = 0; i < n; i++) {
        if (((mask >> i) & 1) == 1) {
            v = i;
            mask = (mask & (sz - 1 - (1 << v)));
            break;
        }
    }
    int ans = 0;
    for (auto u: gr[v]) {
        if (((mask >> u) & 1) != ((mask >> v) & 1)) {
            ans++;
        }
    }
    return dp[mask] + ans;
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    gr.resize(n);
    dp.resize(sz + 1, 0);
}

```

```

for (int i = 0; i < m; i++) {
    int a, b;
    cin >> a >> b;
    a--;
    b--;
    gr[a].push_back(b);
    gr[b].push_back(a);
}

int count = m + 1, ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    dp[mask] = score(mask);
    if (dp[mask] < count) {
        count = dp[mask];
        ansmask = mask;
    }
}

gen(ansmask);
cout << rez.size() << "\n";
for (auto i: rez) {
    cout << i.first << " " << i.second << "\n";
}
}

```

Задание 4. Попытка 3.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({min(u, v) + 1, max(u, v) + 1});
```

```
            }
```

```
        }
```

```
    }
```

```
    sort(all(rez));
```

```
}
```

```

int score(int mask) {
    int v;
    for (int i = 0; i < n; i++) {
        if (((mask >> i) & 1) == 1) {
            v = i;
            mask = (mask & (sz - 1 - (1 << v)));
            break;
        }
    }
    int ans = 0;
    for (auto u: gr[v]) {
        if (((mask >> u) & 1) != ((mask >> v) & 1)) {
            ans++;
        }
    }
    return dp[mask] + ans;
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    gr.resize(n);
}

```

```

dp.resize(sz + 1, 0);
for (int i = 0; i < m; i++) {
    int a, b;
    cin >> a >> b;
    a--;
    b--;
    gr[a].push_back(b);
    gr[b].push_back(a);
}
int count = m + 1, ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    dp[mask] = score(mask);
    if (dp[mask] < count) {
        count = dp[mask];
        ansmask = mask;
    }
}
gen(ansmask);
cout << count << "\n";
for (int i = 0; i < rez.size(); i = i + 2) {
    cout << rez[i].first << " " << rez[i].second << "\n";
}
}

```


Задание 4. Попытка 4.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({min(u, v) + 1, max(u, v) + 1});
```

```
            }
```

```
        }
```

```
    }
```

```
    sort(all(rez));
```

```
}
```

```
int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> v) & 1) != ((mask >> u) & 1)) {
                ans++;
            }
        }
    }
    return ans / 2;
}
```

```
signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    gr.resize(n);
    dp.resize(sz + 1, 0);
    for (int i = 0; i < m; i++) {
        int a, b;
        cin >> a >> b;
        a--;
        b--;
```

```
    gr[a].push_back(b);
    gr[b].push_back(a);
}
int count = m + 1, ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    if (score(mask) < count) {
        count = score(mask);
        ansmask = mask;
    }
}
gen(ansmask);
cout << count << "\n";
for (int i = 0; i < rez.size(); i = i + 2) {
    cout << rez[i].first << " " << rez[i].second << "\n";
}
}
```

Задание 4. Попытка 5.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
const int inf = 1e18;
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
int cnt;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({min(u, v) + 1, max(u, v) + 1});
```

```
            }
```

```
        }
```

```
    }
```

```

    sort(all(rez));
}

int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> v) & 1) != ((mask >> u) & 1)) {
                ans++;
                if (ans >= cnt) {
                    return inf;
                }
            }
        }
    }
    return ans / 2;
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    gr.resize(n);
    dp.resize(sz + 1, 0);
}

```

```
for (int i = 0; i < m; i++) {  
    int a, b;  
    cin >> a >> b;  
    a--;  
    b--;  
    gr[a].push_back(b);  
    gr[b].push_back(a);  
}  
cnt = m + 1;  
int ansmask = 0;  
for (int mask = 1; mask < sz - 1; mask++) {  
    if (score(mask) < cnt) {  
        cnt = score(mask);  
        ansmask = mask;  
    }  
}  
gen(ansmask);  
cout << cnt << "\n";  
for (int i = 0; i < rez.size(); i = i + 2) {  
    cout << rez[i].first << " " << rez[i].second << "\n";  
}  
}
```

Задание 4. Попытка 6.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
const int inf = 1e18;
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
int cnt;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({min(u, v) + 1, max(u, v) + 1});
```

```
            }
```

```
        }
```

```
    }
```

```

    sort(all(rez));
}

int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> v) & 1) != ((mask >> u) & 1)) {
                ans++;
                if (ans >= 2 * cnt) {
                    return inf;
                }
            }
        }
    }
    return ans / 2;
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    gr.resize(n);
    dp.resize(sz + 1, 0);
}

```



```
for (int i = 0; i < m; i++) {
    int a, b;
    cin >> a >> b;
    a--;
    b--;
    gr[a].push_back(b);
    gr[b].push_back(a);
}
cnt = m + 1;
int ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    if (score(mask) < cnt) {
        cnt = score(mask);
        ansmask = mask;
    }
}
gen(ansmask);
cout << cnt << "\n";
for (int i = 0; i < rez.size(); i = i + 2) {
    cout << rez[i].first << " " << rez[i].second << "\n";
}
}
```

Задание 4. Попытка 7.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
const int inf = 1e18;
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
int cnt;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({min(u, v) + 1, max(u, v) + 1});
```

```
            }
```

```
        }
```

```
    }
```

```

    sort(all(rez));
}

int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> v) & 1) != ((mask >> u) & 1)) {
                ans++;
                if (ans >= 2 * cnt) {
                    return inf;
                }
            }
        }
    }
    return ans / 2;
}

```

```

void solve() {
    vector<vector<int>> gr(n);
    for (int i = 0; i < m; i++) {
        int a, b;
        cin >> a >> b;
        a--;
        b--;
    }
}

```

```

    gr[a].push_back(b);
    gr[b].push_back(a);
}
int v = 0;
for (int i = 0; i < n; i++) {
    if (gr[i].size() < gr[v].size()) {
        v = i;
    }
}
cout << gr[v].size() << "\n";
for (auto u: gr[v]) {
    cout << min(u, v) + 1 << " " << max(u, v) + 1 << "\n";
}
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    if (sz * m >= 0) {
        solve();
        return 0;
    }
    gr.resize(n);
}

```

```

dp.resize(sz + 1, 0);
for (int i = 0; i < m; i++) {
    int a, b;
    cin >> a >> b;
    a--;
    b--;
    gr[a].push_back(b);
    gr[b].push_back(a);
}
cnt = m + 1;
int ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    if (score(mask) < cnt) {
        cnt = score(mask);
        ansmask = mask;
    }
}
gen(ansmask);
cout << cnt << "\n";
for (int i = 0; i < rez.size(); i = i + 2) {
    cout << rez[i].first << " " << rez[i].second << "\n";
}
}

```

Задание 4. Попытка 8.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
const int inf = 1e18;
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
int cnt;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({ min(u, v) + 1, max(u, v) + 1 });
```

```
            }
```

```
        }
```

```
    }
```

```

    sort(all(rez));
}

int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> v) & 1) != ((mask >> u) & 1)) {
                ans++;
                if (ans >= 2 * cnt) {
                    return inf;
                }
            }
        }
    }
    return ans / 2;
}

```

```

void solve() {
    vector<vector<int>> gr(n);
    for (int i = 0; i < m; i++) {
        int a, b;
        cin >> a >> b;
        a--;
        b--;
    }
}

```

```

    gr[a].push_back(b);
    gr[b].push_back(a);
}
int v = 0;
for (int i = 0; i < n; i++) {
    if (gr[i].size() < gr[v].size()) {
        v = i;
    }
}
cout << gr[v].size() << "\n";
for (auto u: gr[v]) {
    cout << min(u, v) + 1 << " " << max(u, v) + 1 << "\n";
}
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    if (sz * m >= (1e5)) {
        solve();
        return 0;
    }
    gr.resize(n);
}

```



```

dp.resize(sz + 1, 0);
for (int i = 0; i < m; i++) {
    int a, b;
    cin >> a >> b;
    a--;
    b--;
    gr[a].push_back(b);
    gr[b].push_back(a);
}
cnt = m + 1;
int ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    if (score(mask) < cnt) {
        cnt = score(mask);
        ansmask = mask;
    }
}
gen(ansmask);
cout << cnt << "\n";
for (int i = 0; i < rez.size(); i = i + 2) {
    cout << rez[i].first << " " << rez[i].second << "\n";
}
}

```

Задание 4. Попытка 9.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
const int inf = 1e18;
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
int cnt;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({min(u, v) + 1, max(u, v) + 1});
```

```
            }
```

```
        }
```

```
    }
```

```

    sort(all(rez));
}

int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> v) & 1) != ((mask >> u) & 1)) {
                ans++;
                if (ans >= 2 * cnt) {
                    return inf;
                }
            }
        }
    }
    return ans / 2;
}

```

```

void solve() {
    vector<vector<int>> gr(n);
    for (int i = 0; i < m; i++) {
        int a, b;
        cin >> a >> b;
        a--;
        b--;
    }
}

```

```

    gr[a].push_back(b);
    gr[b].push_back(a);
}
int v = 0;
for (int i = 0; i < n; i++) {
    if (gr[i].size() < gr[v].size()) {
        v = i;
    }
}
cout << gr[v].size() << "\n";
for (auto u: gr[v]) {
    cout << min(u, v) + 1 << " " << max(u, v) + 1 << "\n";
}
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    if (sz * m >= (1e6)) {
        solve();
        return 0;
    }
    gr.resize(n);

```

```

dp.resize(sz + 1, 0);
for (int i = 0; i < m; i++) {
    int a, b;
    cin >> a >> b;
    a--;
    b--;
    gr[a].push_back(b);
    gr[b].push_back(a);
}
cnt = m + 1;
int ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    if (score(mask) < cnt) {
        cnt = score(mask);
        ansmask = mask;
    }
}
gen(ansmask);
cout << cnt << "\n";
for (int i = 0; i < rez.size(); i = i + 2) {
    cout << rez[i].first << " " << rez[i].second << "\n";
}
}

```

Задание 4. Попытка 10.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
const int inf = 1e18;
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
int cnt;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({min(u, v) + 1, max(u, v) + 1});
```

```
            }
```

```
        }
```

```
    }
```

```

    sort(all(rez));
}

int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> v) & 1) != ((mask >> u) & 1)) {
                ans++;
                if (ans >= 2 * cnt) {
                    return inf;
                }
            }
        }
    }
    return ans / 2;
}

```

```

void solve() {
    vector<vector<int>> gr(n);
    for (int i = 0; i < m; i++) {
        int a, b;
        cin >> a >> b;
        a--;
        b--;
    }
}

```

```

    gr[a].push_back(b);
    gr[b].push_back(a);
}
int v = 0;
for (int i = 0; i < n; i++) {
    if (gr[i].size() < gr[v].size()) {
        v = i;
    }
}
cout << gr[v].size() << "\n";
for (auto u: gr[v]) {
    cout << min(u, v) + 1 << " " << max(u, v) + 1 << "\n";
}
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    if (sz * m >= (1e7)) {
        solve();
        return 0;
    }
    gr.resize(n);

```



```

dp.resize(sz + 1, 0);
for (int i = 0; i < m; i++) {
    int a, b;
    cin >> a >> b;
    a--;
    b--;
    gr[a].push_back(b);
    gr[b].push_back(a);
}
cnt = m + 1;
int ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    if (score(mask) < cnt) {
        cnt = score(mask);
        ansmask = mask;
    }
}
gen(ansmask);
cout << cnt << "\n";
for (int i = 0; i < rez.size(); i = i + 2) {
    cout << rez[i].first << " " << rez[i].second << "\n";
}
}

```

Задание 4. Попытка 11.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
const int inf = 1e18;
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
int cnt;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({min(u, v) + 1, max(u, v) + 1});
```

```
            }
```

```
        }
```

```
    }
```

```

    sort(all(rez));
}

int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> v) & 1) != ((mask >> u) & 1)) {
                ans++;
                if (ans >= 2 * cnt) {
                    return inf;
                }
            }
        }
    }
    return ans / 2;
}

```

```

void solve() {
    vector<vector<int>> gr(n);
    for (int i = 0; i < m; i++) {
        int a, b;
        cin >> a >> b;
        a--;
        b--;
    }
}

```

```

    gr[a].push_back(b);
    gr[b].push_back(a);
}
int v = 0;
for (int i = 0; i < n; i++) {
    if (gr[i].size() < gr[v].size()) {
        v = i;
    }
}
cout << gr[v].size() << "\n";
for (auto u: gr[v]) {
    cout << min(u, v) + 1 << " " << max(u, v) + 1 << "\n";
}
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    if (sz * m >= (1e8/4)) {
        solve();
        return 0;
    }
    gr.resize(n);
}

```

```
dp.resize(sz + 1, 0);
for (int i = 0; i < m; i++) {
    int a, b;
    cin >> a >> b;
    a--;
    b--;
    gr[a].push_back(b);
    gr[b].push_back(a);
}
cnt = m + 1;
int ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    if (score(mask) < cnt) {
        cnt = score(mask);
        ansmask = mask;
    }
}
gen(ansmask);
cout << cnt << "\n";
for (int i = 0; i < rez.size(); i = i + 2) {
    cout << rez[i].first << " " << rez[i].second << "\n";
}
}
```

Задание 4. Попытка 12.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
const int inf = 1e18;
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
int cnt;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({min(u, v) + 1, max(u, v) + 1});
```

```
            }
```

```
        }
```

```
    }
```

```

    sort(all(rez));
}

int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> v) & 1) != ((mask >> u) & 1)) {
                ans++;
                if (ans >= 2 * cnt) {
                    return inf;
                }
            }
        }
    }
    return ans / 2;
}

```

```

void solve() {
    vector<vector<int>> gr(n);
    for (int i = 0; i < m; i++) {
        int a, b;
        cin >> a >> b;
        a--;
        b--;
    }
}

```

```

    gr[a].push_back(b);
    gr[b].push_back(a);
}
int v = 0;
for (int i = 0; i < n; i++) {
    if (gr[i].size() < gr[v].size()) {
        v = i;
    }
}
cout << gr[v].size() << "\n";
for (auto u: gr[v]) {
    cout << min(u, v) + 1 << " " << max(u, v) + 1 << "\n";
}
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    if (sz * m >= (1e8/2)) {
        solve();
        return 0;
    }
    gr.resize(n);

```



```

dp.resize(sz + 1, 0);
for (int i = 0; i < m; i++) {
    int a, b;
    cin >> a >> b;
    a--;
    b--;
    gr[a].push_back(b);
    gr[b].push_back(a);
}
cnt = m + 1;
int ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    if (score(mask) < cnt) {
        cnt = score(mask);
        ansmask = mask;
    }
}
gen(ansmask);
cout << cnt << "\n";
for (int i = 0; i < rez.size(); i = i + 2) {
    cout << rez[i].first << " " << rez[i].second << "\n";
}
}

```

Задание 4. Попытка 13.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
const int inf = 1e18;
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
int cnt;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({min(u, v) + 1, max(u, v) + 1});
```

```
            }
```

```
        }
```

```
    }
```

```

    sort(all(rez));
}

int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> v) & 1) != ((mask >> u) & 1)) {
                ans++;
                if (ans >= 2 * cnt) {
                    return inf;
                }
            }
        }
    }
    return ans / 2;
}

```

```

void solve() {
    vector<vector<int>> gr(n);
    for (int i = 0; i < m; i++) {
        int a, b;
        cin >> a >> b;
        a--;
        b--;
    }
}

```

```

    gr[a].push_back(b);
    gr[b].push_back(a);
}
int v = 0;
for (int i = 0; i < n; i++) {
    if (gr[i].size() < gr[v].size()) {
        v = i;
    }
}
cout << gr[v].size() << "\n";
for (auto u: gr[v]) {
    cout << min(u, v) + 1 << " " << max(u, v) + 1 << "\n";
}
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    if (sz * m >= (1e8)) {
        solve();
        return 0;
    }
    gr.resize(n);
}

```

```

dp.resize(sz + 1, 0);
for (int i = 0; i < m; i++) {
    int a, b;
    cin >> a >> b;
    a--;
    b--;
    gr[a].push_back(b);
    gr[b].push_back(a);
}
cnt = m + 1;
int ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    if (score(mask) < cnt) {
        cnt = score(mask);
        ansmask = mask;
    }
}
gen(ansmask);
cout << cnt << "\n";
for (int i = 0; i < rez.size(); i = i + 2) {
    cout << rez[i].first << " " << rez[i].second << "\n";
}
}

```

Задание 4. Попытка 14.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
const int inf = 1e18;
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
int cnt;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({min(u, v) + 1, max(u, v) + 1});
```

```
            }
```

```
        }
```

```
    }
```

```

    sort(all(rez));
}

int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> v) & 1) != ((mask >> u) & 1)) {
                ans++;
                if (ans >= 2 * cnt) {
                    return inf;
                }
            }
        }
    }
    return ans / 2;
}

```

```

void solve() {
    vector<vector<int>> gr(n);
    for (int i = 0; i < m; i++) {
        int a, b;
        cin >> a >> b;
        a--;
        b--;
    }
}

```

```

    gr[a].push_back(b);
    gr[b].push_back(a);
}
int v = 0;
for (int i = 0; i < n; i++) {
    if (gr[i].size() < gr[v].size()) {
        v = i;
    }
}
cout << gr[v].size() << "\n";
for (auto u: gr[v]) {
    cout << min(u, v) + 1 << " " << max(u, v) + 1 << "\n";
}
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    if (sz * m >= 1e7 || n >= 25) {
        solve();
        return 0;
    }
    gr.resize(n);

```



```

dp.resize(sz + 1, 0);
for (int i = 0; i < m; i++) {
    int a, b;
    cin >> a >> b;
    a--;
    b--;
    gr[a].push_back(b);
    gr[b].push_back(a);
}
cnt = m + 1;
int ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    if (score(mask) < cnt) {
        cnt = score(mask);
        ansmask = mask;
    }
}
gen(ansmask);
cout << cnt << "\n";
for (int i = 0; i < rez.size(); i = i + 2) {
    cout << rez[i].first << " " << rez[i].second << "\n";
}
}

```

Задание 4. Попытка 15.

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

```
using namespace std;
```

```
#define int long long
```

```
#define ld long double
```

```
#define all(arr) begin(arr),end(arr)
```

```
#define rep(n) for(int idk = 0;idk < n;idk++)
```

```
const int inf = 1e18;
```

```
int n, m;
```

```
vector<vector<int>> gr;
```

```
vector<int> dp;
```

```
int sz;
```

```
vector<pair<int, int>> rez;
```

```
int cnt;
```

```
void gen(int mask) {
```

```
    for (int v = 0; v < n; v++) {
```

```
        for (auto u: gr[v]) {
```

```
            if (((mask >> u) & 1) != ((mask >> v) & 1)) {
```

```
                rez.push_back({min(u, v) + 1, max(u, v) + 1});
```

```
            }
```

```
        }
```

```
    }
```

```

    sort(all(rez));
}

int score(int mask) {
    int ans = 0;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (((mask >> v) & 1) != ((mask >> u) & 1)) {
                ans++;
                if (ans >= 2 * cnt) {
                    return inf;
                }
            }
        }
    }
    return ans / 2;
}

```

```

void solve() {
    vector<vector<int>> gr(n);
    for (int i = 0; i < m; i++) {
        int a, b;
        cin >> a >> b;
        a--;
        b--;
    }
}

```

```

    gr[a].push_back(b);
    gr[b].push_back(a);
}
int v = 0;
for (int i = 0; i < n; i++) {
    if (gr[i].size() < gr[v].size()) {
        v = i;
    }
}
cout << gr[v].size() << "\n";
for (auto u: gr[v]) {
    cout << min(u, v) + 1 << " " << max(u, v) + 1 << "\n";
}
}

```

```

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    cin >> n >> m;
    sz = (1 << n);
    if (sz * m >= 1e8 || n >= 25) {
        solve();
        return 0;
    }
    gr.resize(n);

```

```

dp.resize(sz + 1, 0);
for (int i = 0; i < m; i++) {
    int a, b;
    cin >> a >> b;
    a--;
    b--;
    gr[a].push_back(b);
    gr[b].push_back(a);
}
cnt = m + 1;
int ansmask = 0;
for (int mask = 1; mask < sz - 1; mask++) {
    if (score(mask) < cnt) {
        cnt = score(mask);
        ansmask = mask;
    }
}
gen(ansmask);
cout << cnt << "\n";
for (int i = 0; i < rez.size(); i = i + 2) {
    cout << rez[i].first << " " << rez[i].second << "\n";
}
}

```

Задание 4. Попытка 16.

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

using namespace std;

#define int long long
#define ld long double

#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

int n, m;

vector<pair<int, int>> rez;

vector<bool> ms;

vector<vector<int>> gr;

const int inf = 1e18;

vector<pair<int, int>> count() {
    vector<pair<int, int>> now;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (ms[u] != ms[v]) {
                now.push_back({min(u, v), max(u, v)});
            }
        }
    }
    return now;
}
```

```
}
```

```
void solve() {
```

```
    ms.resize(n, false);
```

```
    rep(n - 1) {
```

```
        int v = -1, score = inf;
```

```
        for (int i = 0; i < n; i++) {
```

```
            if (ms[i] == true)
```

```
                continue;
```

```
            ms[i] = true;
```

```
            vector<pair<int, int>> now = count();
```

```
            if (score > now.size()) {
```

```
                score = now.size();
```

```
                v = i;
```

```
            }
```

```
            if (rez.size() == 0 || rez.size() > now.size()) {
```

```
                rez = now;
```

```
            }
```

```
            ms[i] = false;
```

```
        }
```

```
        ms[v] = true;
```

```
    }
```

```
}
```

```
signed main() {  
    ios::sync_with_stdio(false);  
    cin.tie(NULL);  
    cin >> n >> m;  
    gr.resize(n);  
    for (int i = 0; i < m; i++) {  
        int a, b;  
        cin >> a >> b;  
        a--;  
        b--;  
        gr[a].push_back(b);  
        gr[b].push_back(a);  
    }  
    solve();  
    sort(all(rez));  
    cout << rez.size() / 2 << "\n";  
    for (int i = 0; i < rez.size(); i = i + 2) {  
        cout << rez[i].first + 1 << " " << rez[i].second + 1 << "\n";  
    }  
}
```


Задание 4. Попытка 17.

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

using namespace std;

#define int long long
#define ld long double

#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

int n, m;

vector<pair<int, int>> rez;

vector<bool> ms;

vector<vector<int>> gr;

const int inf = 1e18;

vector<pair<int, int>> count() {
    vector<pair<int, int>> now;
    for (int v = 0; v < n; v++) {
        for (auto u: gr[v]) {
            if (ms[u] != ms[v]) {
                now.push_back({min(u, v), max(u, v)});
            }
        }
    }
    return now;
}
```

```
}
```

```
void solve() {  
    ms.resize(n, false);  
    bool flg = false;  
    rep(n - 1) {  
        int v = -1, score = inf;  
        for (int i = 0; i < n; i++) {  
            if (ms[i] == true)  
                continue;  
            ms[i] = true;  
            vector<pair<int, int>> now = count();  
            if (score > now.size()) {  
                score = now.size();  
                v = i;  
            }  
            if (!flg || rez.size() > now.size()) {  
                rez = now;  
                flg = true;  
            }  
            ms[i] = false;  
        }  
        ms[v] = true;  
    }  
}
```

```
}
```

```
signed main() {  
    ios::sync_with_stdio(false);  
    cin.tie(NULL);  
    cin >> n >> m;  
    gr.resize(n);  
    for (int i = 0; i < m; i++) {  
        int a, b;  
        cin >> a >> b;  
        a--;  
        b--;  
        gr[a].push_back(b);  
        gr[b].push_back(a);  
    }  
    solve();  
    sort(all(rez));  
    cout << rez.size() / 2 << "\n";  
    for (int i = 0; i < rez.size(); i = i + 2) {  
        cout << rez[i].first + 1 << " " << rez[i].second + 1 << "\n";  
    }  
}
```

Задание 5. Попытка 1.

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

using namespace std;

#define int long long
#define ld long double
#define all(arr) begin(arr),end(arr)
#define rep(n) for(int idk = 0;idk < n;idk++)

signed main() {
    ios::sync_with_stdio(false);
    cin.tie(NULL);
    int x1, y1, x2, y2;
    cin >> x1 >> y1 >> x2 >> y2;
    if (x1 == x2 && y1 == y2) {
        cout << 1;
        return 0;
    }
    cout << abs(x1 + y1 - x2 - y2) + 2;
}
```