

FiberNetwork.cpp

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//
// Created by juan on 10/04/17.
//

#include <iostream>
#include <vector>
#include <cstring>

using namespace std;

vector<vector<pair<int, string> > > v;
bool seen[200];
bool ans[26];

int n, a, b;

void search(int u, int mask){
    //cout << u << " " << mask << endl;
    if (u == b){
        for (int j = 0; j < 26; j++){
            if ((mask >> j) & 1)
                ans[j] = 1;
        }
        return;
    }
    seen[u] = 1;
    string aux;
    int tmp;
    for (int i = 0; i < v[u].size(); i++){
        if (!seen[v[u][i].first]){
            aux = v[u][i].second;
            tmp = 0;
            for (int j = 0; j < aux.size(); j++){
                if ((mask >> (aux[j] - 'a')) & 1)
                    tmp += (1 << (aux[j] - 'a'));
            }
            search(v[u][i].first, tmp);
        }
    }
    seen[u] = 0;
}

void search(){
    seen[a] = 1;
    string aux;
    int mask;
    for (int i = 0; i < v[a].size(); i++){
        aux = v[a][i].second;
        mask = 0;
        for (int j = 0; j < aux.size(); j++){
            mask += (1 << (aux[j] - 'a'));
        }
        search(v[a][i].first, mask);
    }
    seen[a] = 0;
}

int main(){
    cin.tie(0);
    ios_base::sync_with_stdio(0);

```

```
bool flag;
string comp;
cin >> n;
while (n != 0){
    v.assign(n, vector<pair<int, string> >());
    cin >> a >> b;
    while (a != 0 || b != 0){
        cin >> comp;
        v[a-1].push_back(make_pair(b-1, comp));
        cin >> a >> b;
    }
    cin >> a >> b;
    while (a != 0 || b != 0){
        a--;
        b--;
        memset(ans, 0, sizeof(ans));
        flag = false;
        search();
        for (int i = 0; i < 26; i++){
            if (ans[i]) {
                flag = true;
                cout << (char) (i + 'a');
            }
        }
        if (!flag)
            cout << '-';
        cout << endl;
        cin >> a >> b;
    }
    cout << endl;
    cin >> n;
}
}
```