#include <iostream>

#include<fstream>

using namespace std;

ifstream f("intrare.in");

ofstream g("iesire.out");

class graf

{

private:

int n,m,\*\*a,nr,viz[100],c[100];

public:

graf();

graf(const graf &w);

~graf();

void citire();

void citire\_fisier();

void afisare();

void golire();

void bf(int nod);

void df(int nod);

void RW();

void componente\_tari\_conexe();

friend void graf\_tare\_conex(graf &a);

friend istream &operator>>(istream &input,graf &b)

{

f>>b.n;

f>>b.m;

cout<<"Numarul de noduri este ";cout<<b.n<<endl;

cout<<"Numarul de muchii este ";cout<<b.m<<endl;

cout<<endl;

b.citire();

return input;

}

friend ostream &operator<<(ostream &output, graf &b)

{

cout<<"Numarul de noduri "<<b.n<<endl;

cout<<"Numarul de muchii "<<b.m<<endl;

b.afisare();

b.bf(1);

b.golire();

cout<<"PArcurgere in adancime "<<endl;

b.df(1);

b.RW();

b.componente\_tari\_conexe();

return output;

}

graf operator+(const graf&y);

};

graf::graf()

{

nr=0;

f>>n;

f>>m;

a=new int \* [n+1];

for(int i=1; i<=n; i++)

{

a[i]=new int[n+1];

for(int j=0; j<=n; j++)

a[i][j]=0;

}

cout<<"Obiectul a fost creat"<<endl;

}

graf::~graf()

{

for(int i=1;i<=n;i++)

delete []a[i];

delete []a;

}

graf graf::operator+(const graf& y)

{

graf c;

cout<<"Reuniunea grafurilor "<<endl;

int i,j;

// c.afisare();

for(i=1;i<=n;i++)

for(j=1;j<=n;j++)

if(a[i][j]==y.a[i][j])

{

if(y.a[i][j]==0)

c.a[i][j]=0;

else c.a[i][j]=1;

}

else c.a[i][j]=1;

// c.afisare();

return c;

}

void graf::citire()

{

//cout<<"Numarul de noduri este egal cu: ";

//cin>>n;

//cout<<"Numarul de muchii este egal cu: ";

//cin>>m;

int i,x,y;

for(i=1;i<=m;i++)

{

cout<<"Exista muchie de la nodul "; cin>>x;

cout<<" la nodul "; cin>>y;

a[x][y]=1;

}

}

graf::graf(const graf &w)

{

for(int i=1;i<=w.n;i++)

for(int j=1;j<=w.n;j++)

a[i][j]=w.a[i][j];

}

void graf::afisare()

{

cout<<n<<endl;

for(int i=1;i<=n;i++)

{for(int j=1;j<=n;j++)

cout<<a[i][j];

cout<<endl;}

}

void graf::bf(int nod)

{

int k,prim,ultim,varf,i;

cout<<"Parcurgere in latime "<<endl;

viz[nod]=1;

prim=ultim=1;

c[ultim]=nod;

while(prim<=ultim)

{varf=c[prim];

for(k=1;k<=n;k++)

if(a[varf][k]==1 && viz[k]==0)

{

ultim++;

c[ultim]=k;

viz[k]=1;

}

prim++;

}

for(i=1;i<=ultim;i++)

cout<<c[i]<<" ";

cout<<endl;

}

void graf::golire()

{

for(int i=1;i<=100;i++)

{

viz[i]=0;

c[i]=0;

}

}

void graf::df(int nod)

{

int i;

cout<<nod<<" ";

viz[nod]=1;

for(i=1;i<=n;i++)

if(a[nod][i]==1 && viz[i]==0)df(i);

}

void graf::RW()

{

int i,j,k;

cout<<"Matrice drumurilor "<<endl;

for(k=1;k<=n;k++)

for(i=1;i<=n;i++)

for(j=1;j<=n;j++)

if(i!=j)if(a[i][j]==0)a[i][j]=a[i][k]\*a[k][j];

for(int i=1;i<=n;i++)

{for(j=1;j<=n;j++)

cout<<a[i][j];

cout<<endl;}

}

void graf::componente\_tari\_conexe()

{

int i,p[100];

for(i=1;i<=100;i++)

p[i]=0;

cout<<"Componente tari conexe "<<endl;

for(i=1;i<=n;i++)

if(!p[i])

{ nr++;

cout<<i<<" ";

p[i]=1;

for(int j=1;j<=n;j++)

if(a[i][j]\*a[j][i]==1)

{

cout<<j<<" ";

p[j]=1;

}

cout<<endl;

}

}

void graf\_tare\_conex(graf &a)

{

if(a.nr!=1)cout<<"Graful nu este tare conex"<<endl;

else cout<<"Graful este tare conex "<<endl;

}

int main()

{

graf G,F;

cin>>G;

cout<<G;

cin>>F;

cout<<F;

graf S(G+F);

cout<<S;

//G.bf(1);

//golire();

//G.df(1);

// G.RW();

//cout<<G;

// G.componente\_tari\_conexe();

//graf\_tare\_conex(G);

return 0;

}