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#include<iostream>
using namespace std;

class tree
{
    int a[20][20],l,u,w,i,j,v,e,visited[20];
public:
    void input();
    void display();
    void minimum();
};

void tree::input()
{
    cout<<"Enter the no. of branches: ";
    cin>>v;

    for(i=0;i<v;i++)
    {
        visited[i]=0;
        for(j=0;j<v;j++)
        {
            a[i][j]=999;
        }
    }

    cout<<"\nEnter the no. of connections: ";
    cin>>e;

    for(i=0;i<e;i++)
    {
        cout<<"Enter the end branches of connections: "<<endl;
        cin>>l>>u;
        cout<<"Enter the phone company charges for this connection: ";
        cin>>w;
        a[l-1][u-1]=a[u-1][l-1]=w;
    }
}

void tree::display()
{
    cout<<"\nAdjacency matrix:";
    for(i=0;i<v;i++)
    {
        cout<<endl;
        for(j=0;j<v;j++)
        {
            cout<<a[i][j]<<"    ";
        }
        cout<<endl;
    }
}

void tree::minimum()
{
    int p=0,q=0,total=0,min;
    visited[0]=1;
    for(int count=0;count<(v-1);count++)
    {

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        min=999;
        for(i=0;i<v;i++)
        {
            if(visited[i]==1)
            {
                for(j=0;j<v;j++)
                {
                    if(visited[j]!=1)
                    {
                        if(min > a[i][j])
                        {
                            min=a[i][j];
                            p=i;
                            q=j;
                        }
                    }
                }
            }
            visited[p]=1;
            visited[q]=1;
            total=total+min;
            cout<<"Minimum cost connection is"<<(p+1)<<" -> "<<(q+1)<<" with
charge : "<<min<< endl;

        }
        cout<<"The minimum total cost of connections of all branches is:
"<<total<<endl;
    }

int main()
{
    int ch;
    tree t;
    do
    {
        cout<<"=====PRIM'S ALGORITHM===== "<<endl;
        cout<<"\n1.INPUT\n \n2.DISPLAY\n \n3.MINIMUM\n"<<endl;
        cout<<"Enter your choice : "<<endl;
        cin>>ch;

        switch(ch)
        {
            case 1: cout<<"*****INPUT YOUR VALUES*****"<<endl;
                    t.input();
                    break;

            case 2: cout<<"*****DISPLAY THE CONTENTS*****"<<endl;
                    t.display();
                    break;

            case 3: cout<<"*****MINIMUM*****"<<endl;
                    t.minimum();
                    break;
        }

    }while(ch!=4);
    return 0;
}

```