#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++)

{

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;

}