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/*
Distance Vector Routing in this program is implemented using Bellman Ford Algorithm:-
*/
#include<stdio.h>
struct node
{
    unsigned dist[20];
    unsigned from[20];
}rt[10];
int main()
{
    int costmat[20][20];
    int nodes,i,j,k,count=0;
    printf("\nEnter the number of nodes : ");
    scanf("%d",&nodes);//Enter the nodes
    printf("\nEnter the cost matrix :\n");
    for(i=0;i<nodes;i++)
    {
        for(j=0;j<nodes;j++)
        {
            scanf("%d",&costmat[i][j]);
            costmat[i][i]=0;
            rt[i].dist[j]=costmat[i][j];//initialise the distance equal to cost matrix
            rt[i].from[j]=j;
        }
    }
    do
    {
        count=0;
        for(i=0;i<nodes;i++)//We choose arbitrary vertex k and we calculate the
direct distance from the node i to k using the cost matrix
        //and add the distance from k to node j
        for(j=0;j<nodes;j++)
        for(k=0;k<nodes;k++)
            if(rt[i].dist[j]>costmat[i][k]+rt[k].dist[j])
            {
                //We calculate the minimum distance
                rt[i].dist[j]=rt[i].dist[k]+rt[k].dist[j];
                rt[i].from[j]=k;
                count++;
            }
    }while(count!=0);
    for(i=0;i<nodes;i++)
    {
        printf("\n\n For router %d\n",i+1);
        for(j=0;j<nodes;j++)
        {
            printf("\t\nnode %d via %d Distance %d
",j+1,rt[i].from[j]+1,rt[i].dist[j]);
        }
        printf("\n\n");
    }
    //getch(); }

```