

CN LAB
CYCLE 2
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PROGRAM 2

Write a program for distance vector algorithm to find a suitable path for transmission

```
#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();
}

```

OUTPUT

```

Enter the number of nodes : 3

Enter the cost matrix :
0 2 7
2 0 1
7 1 0

For router 1
node 1 via 1 Distance 0
node 2 via 2 Distance 2
node 3 via 2 Distance 3

For router 2
node 1 via 1 Distance 2
node 2 via 2 Distance 0
node 3 via 3 Distance 1

For router 3
node 1 via 2 Distance 3
node 2 via 2 Distance 1
node 3 via 3 Distance 0

...Program finished with exit code 0
Press ENTER to exit console.

```