***//Assignment-5 Computer Networks Lab***

***//A program to simulate and implement distance vector routing 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);

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];

rt[i].from[j]=j;

}

}

do

{

count=0;

for(i=0;i<nodes;i++)

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 :

7 4 1

8 5 2

9 6 3

For router 1

node 1 via 1 Distance 0

node 2 via 2 Distance 4

node 3 via 3 Distance 1

For router 2

node 1 via 1 Distance 8

node 2 via 2 Distance 0

node 3 via 3 Distance 2

For router 3

node 1 via 1 Distance 9

node 2 via 2 Distance 6

node 3 via 3 Distance 0