Assignment 5

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Simulation of distance vector Routing algorithm.

CODE:

```
#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 arbitary 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");
    }
```

OUTPUT:

```
Enter the number of nodes : 3
Enter the cost matrix :
1
2
3
4
5
6
7
8
7

8


 For router 1

node 1 via 1 Distance 0
node 2 via 2 Distance 2
node 3 via 3 Distance 3
```

```
 For router 2

node 1 via 1 Distance 4
node 2 via 2 Distance 0
node 3 via 3 Distance 6

 For router 3

node 1 via 1 Distance 7
node 2 via 2 Distance 7
node 3 via 3 Distance 0
```