

DISTANCE VECTOR ROUTING:

```
#include<stdio.h>
```

```
struct node
```

```
{
```

```
    unsigned dist[20];
```

```
    unsigned from[20];
```

```
}rt[10];
```

```
int main()
```

```
{
```

```
    int dmat[20][20];
```

```
    int n,i,j,k,count=0;
```

```
    printf("\nEnter the number of nodes : ");
```

```
    scanf("%d",&n);
```

```
    printf("\nEnter the cost matrix :\n");
```

```
    for(i=0;i<n;i++)
```

```
        for(j=0;j<n;j++)
```

```
        {
```

```
            scanf("%d",&dmat[i][j]);
```

```
            dmat[i][i]=0;
```

```
            rt[i].dist[j]=dmat[i][j];
```

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

```
        }
```

```
    do
```

```
    {
```

```
        count=0;
```

```
        for(i=0;i<n;i++)
```

```
            for(j=0;j<n;j++)
```

```
                for(k=0;k<n;k++)
```

```
                    if(rt[i].dist[j]>dmat[i][k]+rt[k].dist[j])
```

```
                    {
```

```
                        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<n;i++)
{
    printf("\n\nState value for router %d is \n",i+1);
    for(j=0;j<n;j++)
    {
        printf(" \t\nnode %d via %d Distance%d\n",j+1,rt[i].from[j]+1,rt[i].dist[j]);
    }
}

printf("\n\n");
}

```

OUTPUT:

```
Enter the number of nodes : 5
```

```
Enter the cost matrix :
```

```
0 3 2 1 99
3 0 99 99 5
2 99 0 99 6
1 99 99 0 7
99 5 6 7 0
```

```
State value for router 1 is
```

```
node 1 via 1 Distance0
node 2 via 2 Distance3
node 3 via 3 Distance2
node 4 via 4 Distance1
node 5 via 2 Distance8
```

```
State value for router 2 is
```

```
node 1 via 1 Distance3
node 2 via 2 Distance0
node 3 via 1 Distance5
node 4 via 1 Distance4
node 5 via 5 Distance5
```

```
State value for router 3 is
```

State value for router 3 is

node 1 via 1 Distance2
node 2 via 1 Distance5
node 3 via 3 Distance0
node 4 via 1 Distance3
node 5 via 5 Distance6

State value for router 4 is

node 1 via 1 Distance1
node 2 via 1 Distance4
node 3 via 1 Distance3
node 4 via 4 Distance0
node 5 via 5 Distance7

State value for router 5 is

node 1 via 2 Distance8
node 2 via 2 Distance5
node 3 via 3 Distance6
node 4 via 4 Distance7
node 5 via 5 Distance0

...Program finished with exit code 0