**PROG 4**

#include<stdio.h>

void dij(int,int[20][20],int[20],int[20],int);

void main()

{

inti,j,n,visited[20],source,cost[20][20],d[20];

printf("Enter no. of vertices: ");

scanf("%d",&n);

printf("Enter the cost adjacency matrix");

for (i=1; i <= n; i++)

{

for(j=1;j<=n;j++)

{

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

}

}

printf("\nEnter the source node:");

scanf("%d", &source);

dij(source,cost,visited,d,n);

for (i = 1; i <= n; i++)

{

if(i!=source)

printf("\nShortest path from %d to % dis %d",source,i,d[i]);

}

}

void dij(int source,int cost[20][20],int visited[20],int d[20],int n)

{

int i,j,min,u,w;

for(i=1; i<=n;i++)

{

visited[i]=0;

d[i]=cost[source][i];

}

visited[source]=1;

d[source]=0;

for(j=2;j<=n;j++)

{

min =999;

for(i=1;i<=n;i++)

{

if(!visited[i])

{

if(d[i]<min)

{

min=d[i];u = i;

}

}

}

visited[u]= 1;

for(w=1;w<=n;w++)

{

if(cost[u][w]!=999&&visited[w] ==0)

{

if(d[w] >cost[u][w]+d[u])

d[w] =cost[u][w]+d[u];

}

}

}

}