**#include <stdio.h>**

**#include <limits.h>**

**main(){**

**printf("Enter the number of nodes");**

**int numberofnodes;**

**scanf("%d",&numberofnodes);**

**printf("Enter the matrix");**

**int i;**

**int j;**

**int matrix[numberofnodes][numberofnodes];**

**for(i=0;i<numberofnodes;i++){**

**for(j=0;j<numberofnodes;j++){**

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

**}**

**}**

**int thesmallestdistancecovered[numberofnodes];**

**int thenumberofvisitednodes[numberofnodes];**

**printf("Enter the source vertex");**

**int source;**

**scanf("%d",&source);**

**for(i=0;i<numberofnodes;i++){**

**if(i==source){**

**thesmallestdistancecovered[i]=0;**

**thenumberofvisitednodes[i]=1;**

**}**

**else{**

**thesmallestdistancecovered[i]=INT\_MAX;**

**thenumberofvisitednodes[i]=0;**

**}**

**}**

**i=0;**

**int nowthenodevisitedis;**

**nowthenodevisitedis=source;**

**while(i<numberofnodes){**

**thenumberofvisitednodes[nowthenodevisitedis]=1;**

**int minimumdistance;**

**minimumdistance=INT\_MAX;**

**int minimumdistancenode;**

**for(j=0;j<numberofnodes;j++){**

**if(thenumberofvisitednodes[j]!=1 && matrix[nowthenodevisitedis][j]!=0){**

**if((thesmallestdistancecovered[nowthenodevisitedis]+matrix[nowthenodevisitedis][j]<thesmallestdistancecovered[j])){**

**thesmallestdistancecovered[j]=thesmallestdistancecovered[nowthenodevisitedis]+matrix[nowthenodevisitedis][j];**

**}**

**if(minimumdistance>thesmallestdistancecovered[j] && thenumberofvisitednodes[j]!=1){**

**minimumdistancenode=j;**

**minimumdistance=thesmallestdistancecovered[j];**

**}**

**}**

**}**

**nowthenodevisitedis=minimumdistancenode;**

**i=i+1;**

**}**

**for(i=0;i<numberofnodes;i++){**

**printf("The shortest distance to node %d is %d\n",i,thesmallestdistancecovered[i]);**

**}**

**}**

