From a given vertex in a weighted connected graph, find shortest paths to other vertices using Dijkstra's algorithm.

Program:

```
#include<stdio.h>
#include<conio.h>
void dijkstras();
int c[10][10],n,src;
void main()
{
 int i,j;

 printf("\nenter the no of vertices:\t");
 scanf("%d",&n);
 printf("\nenter the cost matrix:\n");
 for(i=1;i<=n;i++)
 {
  for(j=1;j<=n;j++)
  {
   scanf("%d",&c[i][j]);
  }
 }
 printf("\nenter the source node:\t");
 scanf("%d",&src);
 dijkstras();

}

void dijkstras()
{
  int vis[10],dist[10],u,j,count,min;
  for(j=1;j<=n;j++)
  {
   dist[j]=c[src][j];
  }
  for(j=1;j<=n;j++)
  {
   vis[j]=0;
  }
  dist[src]=0;
  vis[src]=1;
  count=1;
  while(count!=n)
  {
   min=9999;
   for(j=1;j<=n;j++)
   {
    if(dist[j]<min&&vis[j]!=1)
    {
     min=dist[j];
     u=j;
    }
   }
   vis[u]=1;
   count++;
   for(j=1;j<=n;j++)
   {
    if(min+c[u][j]<dist[j]&&vis[j]!=1)
    {
     dist[j]=min+c[u][j];
    }
   }
  }
  printf("\nthe shortest distance is:\n");
  for(j=1;j<=n;j++)
  {
```

```
  printf("\n%d----->%d=%d",src,j,dist[j]);
 }
}
```

```
enter the no of vertices:       5

enter the cost matrix:
9999          3    9999         7      9999
      3    9999          4          2     9999
9999          4    9999          5           6
     7           2          5    9999           4
9999    9999          6          4     9999

enter the source node:  1

the shortest distance is:

1----->1=0
1----->2=3
1----->3=7
1----->4=5
1----->5=9
Process returned 5 (0x5)   execution time : 43.653 s
Press any key to continue.
```