LAB PROGRAM 10

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

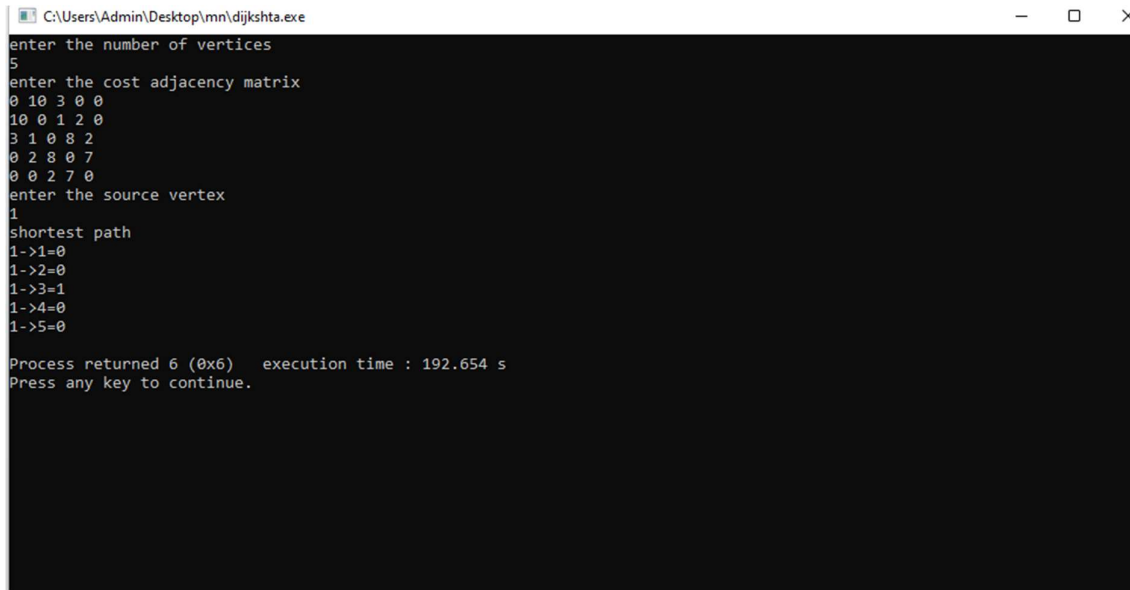## SOURCE CODE

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

void dijkstra(int n,int cost[10][10],int src)
{
    int i,j,u,dis[10],vis[10],min;
    for(i=1;i<=n;i++)
    {
        dis[i]=cost[src][i];
        vis[i]=0;
    }
    vis[src]=1;
    for(i=1;i<=n;i++)
    {
        min=999;
        for(j=1;j<=n;j++)
        {
            if(vis[j]==0 && dis[j]<min)
            {
                min=dis[j];
                u=j;
            }
        }
        vis[u]=1;
        for(j=1;j<=n;j++)
        {
            if(vis[j]==0 && dis[u]+cost[u][j]<dis[j])
            {
                dis[j]=dis[u]+cost[u][j];
            }
        }
    }

printf("shortest path\n");
for(i=1;i<=n;i++)
    printf("%d->%d=%d\n",src,i,dis[i]);
}
```

```
void main()
{
    int src,j,cost[10][10],n,i;
    printf("enter the number of vertices\n");
    scanf("%d",&n);
    printf("enter the cost adjacency matrix\n");
    for(i=1;i<=n;i++)
      for(j=1;j<=n;j++)
            scanf("%d",&cost[i][j]);
    printf("enter the source vertex\n");
    scanf("%d",&src);
    dijkstra(n,cost,src);
}
```

OUTPUT SCREENSHOT

```
C:\Users\Admin\Desktop\mn\dijkshta.exe                              —    □    ×
enter the number of vertices
5
enter the cost adjacency matrix
0 10 3 0 0
10 0 1 2 0
3 1 0 8 2
0 2 8 0 7
0 0 2 7 0
enter the source vertex
1
shortest path
1->1=0
1->2=0
1->3=1
1->4=0
1->5=0

Process returned 6 (0x6)    execution time : 192.654 s
Press any key to continue.
```