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

```
#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