Design and Analysis of Algorithms – 20ISL57A

Program 6 - Implement and analyze Dijkstra's algorithm to find the shortest path from a given source.

```
#include<stdio.h>
int main()
{
   int n,a[20][20],i,j,min,u,v,s[10],d[10],k;
   printf("Enter the number of vertices\n");
   scanf("%d",&n);
   printf("Enter adjacency matrix\n");
   for(i=1;i<=n;i++)
   {
        for(j=1;j<=n;j++)
        {
           scanf("%d",&a[i][j]);
        }
   }
   printf("Enter source vertex\n");
   scanf("%d",&v);
   for(i=1;i<=n;i++)
   {
        s[i]=0;
        d[i]=a[v][i];
   }
   d[v]=0;
   s[v]=1;
   for(k=2;k<=n;k++)
   {
        min=999;
        for(i=1;i<=n;i++)
        {
           if(d[i]<min && s[i]==0)
           {
                min=d[i];
                u=i;
```

```
            }
        }
        s[u]=1;
        for(i=1;i<=n;i++)
        {
            if(s[i]==0)
            {
                if(d[i]>d[u]+a[u][i])
                {
                    d[i]=d[u]+a[u][i];
                }
            }
        }
    }
    for(i=1;i<=n;i++)
    {
        printf("%d---->%d=%d\n",v,i,d[i]);
    }
}
```