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]);
    }
}
```

OUTPUT:

```
User@PRATHIKSHA /c/ada lab
$ cd "/c/ada lab/" && gcc dijkstras.c -o dijkstras && "/c/ada lab/"dijkstras

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
```