

[With Modification] {Print number of nodes along shortest paths}

```
#include <stdio.h>
#include <conio.h>
#define INFINITY 9999
#define MAX 9

void dijkstra (int G [MAX] [MAX], int n, int startnode,
int mtrx)
{
    int G [MAX] [MAX], i, j, n, u;
    printf ("Enter no. of vertices: ");
    scanf ("%d", &n);
    printf ("\nEnter the adjacency matrix: ");
    for (j=0; j<n; j++)
        scanf ("%d", &G[i][j]);
    printf ("\nEnter the starting node: ");
    scanf ("%d", &u);
    dijkstra (G, n, u);
    return 0;
}

3.
void dijkstra (int G [MAX] [MAX], int n, int startnode)
{
    int cost [MAX] [MAX], distance [MAX], prev [MAX],
    int visited [MAX], count, mindistance, nextnode, i, j;
    for (i=0; i<n; i++)
        for (j=0; j<n; j++)
            if (G[i][j] == 0)
                cost [i][j] = INFINITY;
    else
        (3)
```

```
cost C[i][C[j]] = G[C[i][j]];  
for (i=0; i<n; i++)  
{  
    distance C[i] = cost (start node) C[i];  
    Pred C[i] = start node;  
    visited C[i] = 0;  
}  
distance [start node] = 0;  
visited [start node] = 1;  
count = 1;  
while (count < (n-1))  
{  
    mindistance = INFINITY;  
    if (distance C[i] < mindistance && !visited C[i])  
    {  
        mindistance = distance C[i];  
        nextnode = i;  
    }  
    visited [nextnode] = 1;  
    for (i=0; i<n; i++)  
    if (!visited C[i])  
    if (mindistance + cost [nextnode] C[i] < distance C[i])  
    {  
        distance C[i] = mindistance + cost [nextnode] C[i];  
        Pred C[i] = next node;  
    }  
    count ++;  
}  
for (i=0; i<n; i++)  
if (i != start node)
```

Saikh
18MBCS210

```
Print f ("Distance of node %d = %d", i, distance[i]);  
Print f ("Path = %d", i);  
j = i;  
do  
{  
    j = pred[j];  
    Print f ("< - %d", j);  
} while (j != start node);  
}  
Print f ("The total number of nodes are %d", count);  
}
```

Output with MOD :

```
"C:\Users\Sailesh Ranjitkar\Documents\cblocks\bin\Debug\ds.exe"
Enter no. of vertices:3

Enter the adjacency matrix:
1
2
3
4
5
6
7
8
9

Enter the starting node:2

Distance of node0=7
Path=0<-2
Distance of node1=8
Path=1<-2The total number of nodes are 2
Process returned 0 (0x0)    execution time : 9.679 s
Press any key to continue.
```

Output without MOD :

```
"C:\Users\Sailesh Ranjitkar\Documents\cblocks\bin\Debug\ds.exe"
Enter no. of vertices:3

Enter the adjacency matrix:
1
2
3
4
5
6
7
8
9

Enter the starting node:2

Distance of node0=7
Path=0<-2
Distance of node1=8
Path=1<-2
Process returned 0 (0x0)    execution time : 8.646 s
Press any key to continue.
```