

Name: ShreeGanesh Vishwakarma Roll No.: 65

Experiment No. 7

Program:

```
Activities Text Editor Sep 11 15:07
a.c
~/Documents/555
Save

1 #include <stdio.h>
2 #include <stdlib.h>
3
4 int source, V, E, time, visited[20], G[20][20];
5
6 void DFS(int l) {
7     int j;
8     visited[l] = 1;
9     printf("kd->", l + 1);
10    for (j = 0; j < V; j++) {
11        if (G[l][j] == 1 && visited[j] == 0)
12            DFS(j);
13    }
14 }
15
16 int main() {
17     int i, j, v1, v2;
18     printf("\t\t\tGraphs\n");
19     printf("Enter the no of edges: ");
20     scanf("%d", &E);
21     printf("Enter the no of vertices: ");
22     scanf("%d", &V);
23
24     for (i = 0; i < V; i++) {
25         for (j = 0; j < V; j++) {
26             G[i][j] = 0;
27         }
28     }
29
30     for (i = 0; i < E; i++) {
31         scanf("%d %d", &v1, &v2);
32
33         v1--;
34         v2--;
35
36         G[v1][v2] = 1;
37         G[v2][v1] = 1;
38     }
39
40     // Print the adjacency matrix
41     printf("Adjacency Matrix:\n");
42     for (i = 0; i < V; i++) {
43         for (j = 0; j < V; j++) {
44             printf("%d ", G[i][j]);
45         }
46     }
47 }
```

```
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19 printf("Enter the no of edges: ");
20 scanf("%d", &E);
21 printf("Enter the no of vertices: ");
22 scanf("%d", &V);
23
24 for (i = 0; i < V; i++) {
25     for (j = 0; j < V; j++) {
26         G[i][j] = 0;
27     }
28 }
29
30 for (i = 0; i < E; i++) {
31     scanf("%d %d", &v1, &v2);
32
33     v1--;
34     v2--;
35
36     G[v1][v2] = 1;
37     G[v2][v1] = 1;
38 }
39
40 // Print the adjacency matrix
41 printf("Adjacency Matrix:\n");
42 for (i = 0; i < V; i++) {
43     for (j = 0; j < V; j++) {
44         printf("%d ", G[i][j]);
45     }
46     printf("\n");
47 }
48
49 printf("Enter the source: ");
50 scanf("%d", &source);
51
52 for (i = 0; i < V; i++) {
53     visited[i] = 0;
54 }
55
56 printf("DFS traversal starting from node %d:\n", source);
57 DFS(source - 1);
58
59 return 0;
60 }
61 }
```

Output:

```
itl4@22DL407:~$ gcc exp9.c
^C
itl4@22DL407:~$ gcc exp9.c
itl4@22DL407:~$ ./a.out
Graphs
Enter the no of edges:8
Enter the no of vertices:9
Enter the edges (format: V1 V2) : 1 2
Enter the edges (format: V1 V2) : 8 3
Enter the edges (format: V1 V2) : 7 5
Enter the edges (format: V1 V2) : 1 4
Enter the edges (format: V1 V2) : 6
8
Enter the edges (format: V1 V2) : 1 6
Enter the edges (format: V1 V2) : 7 2
Enter the edges (format: V1 V2) : 1 0
0 1 0 1 0 1 0 0 0
0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 1 0
0 1 0 0 1 0 0 0 0
0 0 1 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0
Enter the source: 7
itl4@22DL407:~$
```

Program:

```
1 #include <stdio.h>
2
3 int a[20][20], q[20], visited[20], n, f = -1, r = -1;
4 void bfs(int v) {
5     int i;
6     for (i = 0; i < n; i++) {
7         if (a[v][i] != 0 && visited[i] == 0) {
8             r = r + 1;
9             q[r] = i;
10            visited[i] = 1;
11            printf("%d ", i);
12        }
13    }
14    f = f + 1;
15    if (f <= r)
16        bfs(q[f]);
17 }
18 int main() {
19     int v, i, j;
20     printf("\nEnter number of vertices");
21     scanf("%d", &n);
22     for (i = 0; i < n; i++) {
23         visited[i] = 0;
24     }
25     printf("\nEnter graph data in matrix form\n");
26     for (i = 0; i < n; i++) {
27         for (j = 0; j < n; j++) {
28             scanf("%d", &a[i][j]);
29         }
30     }
31     printf("\nEnter the starting vertex");
32     scanf("%d", &v);
33     f = r = 0;
34     q[r] = v;
35     visited[v] = 1;
36     printf("%d ", v);
37     bfs(v);
38     if (r != n - 1) {
39         printf("\nBFS not possible\n");
40     }
41     return 0;
42 }
```

Output:

```
itl4@22DL407:~$ gedit exp9.1.c
^C
itl4@22DL407:~$ gcc exp9.1.c
itl4@22DL407:~$ ./a.out

Enter number of vertices5

Enter graph data in matrix form
0 1 0 0 1
1 0 1 1 1
0 1 0 1 0
0 1 1 0 1
1 1 0 1 0

Enter the starting vertex3
31240
itl4@22DL407:~$ gedit exp9.1.c
█
```