

DFS:

```
#include <stdio.h>
#include <stdlib.h>

int a[20][20], reach[20], n, i, j, count = 0;

void dfs(int v)
{
    int k;
    reach[v] = 1;
    for (k = 1; k <= n; k++)
        if (a[v][k] && !reach[k])
        {
            printf("\n %d->%d", v, k);
            dfs(k);
        }
}

int main()
{
    printf("Enter the number of vertices: ");
    scanf("%d", &n);

    for (i = 1; i <= n; i++)
    {
        reach[i] = 0;
        for (j = 1; j <= n; j++)
            a[i][j] = 0;
    }

    printf("Enter the adjacency matrix of the graph:\n");
    for (i = 1; i <= n; i++)
        for (j = 1; j <= n; j++)
            scanf("%d", &a[i][j]);
    printf("The graph is-\n");
    for (i = 1; i <= n; i++)
    {
        for (j = 1; j <= n; j++)
            printf("%d\t", a[i][j]);
        printf("\n");
    }

    dfs(1);
    printf("\n");
}
```

```
for (i = 1; i <= n; i++)
{
    if (reach[i])
        count++;
}
if (count == n)
{
    printf("Graph is connected\n");
}
else
    printf("Graph is not connected\n");
}
```

OUTPUT:

```
Enter the number of vertices: 3
Enter the adjacency matrix of the graph:
```

```
0 1 0
```

```
1 0 0
```

```
0 0 0
```

```
The graph is-
```

```
0      1      0
```

```
1      0      0
```

```
0      0      0
```

```
1->2
```

```
Graph is not connected
```

```
User@PRATHIKSHA /c/ada lab
```

```
$ cd "/c/ada lab/" && gcc dfs.c -o dfs && "/c/ada lab/"dfs
```

```
Enter the number of vertices: 4
```

```
Enter the adjacency matrix of the graph:
```

```
0 1 1 0
```

```
1 0 1 0
```

```
1 1 0 1
```

```
0 0 1 0
```

```
The graph is-
```

```
0      1      1      0
```

```
1      0      1      0
```

```
1      1      0      1
```

```
0      0      1      0
```

```
1->2
```

```
2->3
```

```
3->4
```

```
Graph is connected
```