```
#include <stdio.h>
#define V 12
int vis[V] = {0};
void DFS(int graph[][V], int numV, int u)
{
	vis[u] = 1;
	printf("%d ", u);
	int i;
	for (i = 0; i <= numV; i++)
	{
		if (graph[u][i] == 1 && vis[i] == 0)
			DFS(graph, numV, i);
	}
}
void addEdge(int[][V], int, int);
void printAdjacencyMatrix(int[][V], int);

int main()
{
	int graph[V][V] = {0};
	int numVertices, numEdges, l;
	printf("Enter the number of vertices in the graph ");
	scanf("%d", &numVertices);
	int i,j;
	for (i = 1; i <= numVertices; i++)
	{
		printf("\nEnter the number of edges from %d : ", i);
		scanf("%d", &numEdges);
		for (j = 0; j < numEdges; j++)
		{
			printf("\nEnter the connection %d : ", j + 1);
			scanf("%d", &l);
			addEdge(graph, i, l);
		}
	}
	int startNode;
	printf("\nEnter the start vertex\n");
	scanf("%d", &startNode);
	printf("\nAdjacency matrix\n");
	printAdjacencyMatrix(graph, numVertices);
	printf("\nDepth first traversal from node %d\n", startNode);
	DFS(graph, numVertices, startNode);
	return 0;
}

void addEdge(int graph[][V], int u, int v)
{
	graph[u][v] = 1;
	graph[v][u] = 1;
}
void printAdjacencyMatrix(int graph[][V], int numV)
{
```

```
        int i, j, k;
        printf(" ");
        for ( k = 1; k <= numV; k++)
                printf("%3d ", k);
        printf("\n");
        for (k = 0; k <= numV; k++)
                printf("____");
        printf("\n");
        for (i = 1; i <= numV; i++)
        {
                printf("%2d|", i);
                for (j = 1; j <= numV; j++)
                {
                        printf("%3d ", graph[i][j]);
                }
                printf("\n");
        }
        printf("\n\n\n");
}
```

```
Enter the number of vertices in the graph 4

Enter the number of edges from 1 : 2

Enter the connection 1 : 3

Enter the connection 2 : 2

Enter the number of edges from 2 : 2

Enter the connection 1 : 3

Enter the connection 2 : 4

Enter the number of edges from 3 : 3

Enter the connection 1 : 1

Enter the connection 2 : 2

Enter the connection 3 : 3

Enter the number of edges from 4 : 2

Enter the connection 1 : 3

Enter the connection 2 : 2

Enter the start vertex
1

Adjacency matrix
   1   2   3   4
____________________
 1|  0   1   1   0
```