ASSIGNMENT

Subject: Algorithm

Course code: CSE-221

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Depth First Search (DFS)

Depth-**first search**(DFS) is an algorithm for traversing or searching tree or graph data structures. The algorithm starts at the root node (selecting some arbitrary node as the root node in the case of a graph) and explores as far as possible along each branch before backtracking.

CODE:

```
#include <stdio.h>

#define true 1
#define false 0

void DFSDriver(int V, int S, int Graph[][V], char *visited)
{
	visited[S] = true;
	printf("%d ", S+1);
	for(int i=0; i<V; i++)
		if(Graph[S][i] && !visited[i])
			DFSDriver(V, i, Graph, visited);
}

void DFS(int V, int S, int Graph[][V])
{
	char visited[V];
	for(int i=0; i<V; i++) visited[i] = false;
	DFSDriver(V, S, Graph, visited);
	printf("\n");
}

int main()
{
	int V, E, source, v, w;
	scanf("%d", &V);

	int Graph[V][V];
	for(int i=0; i<V; i++)
		for(int j=0; j<V; j++)
			Graph[i][j] = false;
	scanf("%d", &E);
	for(int i=0; i<E; i++)
	{
		scanf("%d %d", &v, &w);

		Graph[v-1][w-1] = true;
	}
	scanf("%d", &source);

	DFS(V, source-1, Graph);
	return 0;
}
```

SIMULATION: