Exp No. 3
Date: 28/9/24

Depth First Search

AIM

To traverse a graph or tree starting from a node & visiting depth

Algorithm

* created a visited set
* created a stack & push the starting node
* mark the starting node
* when stack is not empty
  pop a node & print the node, & push
* terminate when stack is empty

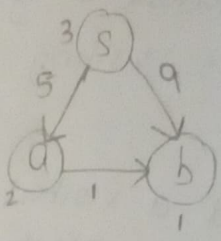
Code

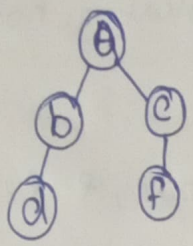
```
def dfs(graph, start)
    visited = set()
    stack = [start]
    visited.add(start)

    while stack:
        vertex = stack.pop()
        print(vertex, end = " ")

        for neighbor in reversed(graph[vertex]):
            if neighbor not in visited:
                visited.add(neighbor)
                stack.append(neighbor)


graph = {}
n = int(input("enter no of nodes"))
for i in range(n):
    node = input(f"Enter node {i+1}: ")
    neighbor = input(f"enter neighbor of {node}").split()
    graph[node] = neighbors
```

start_node = input("enter the starting node:")
dfs(graph, start_node)

Output

for graph





Enter number of nodes : 5
enter node 1: a
enter neighbors of a : b.c
enter node 2 : b
enter neighbor of b : d
enter node3 : c
enter neighbor of c : f
enter node 4 : d
enter neighbor of d :
enter node 5 : f
enter neighbor to f :

Enter starting node : a
a b d c F

RESULT

Thus Depth first search algorithm is successfully executed & output is verified