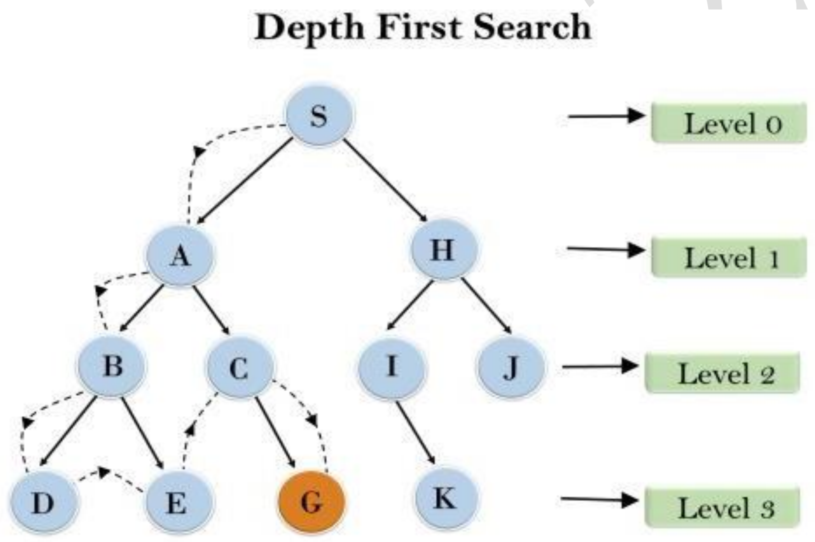
EX.NO: 02 **DATE: 24/08/24**

DEPTH-FIRST SEARCH

- Depth-first search (DFS) algorithm or searching technique starts with the root node of graph G, and then travel deeper and deeper until we find the goal node or the node which has no children by visiting different node of the tree.
- The algorithm, then backtracks or returns back from the dead end or last node towards the most recent node that is yet to be completely unexplored.
- The data structure (DS) which is being used in DFS Depth-first search is stack. The process is quite similar to the BFS algorithm.
- In DFS, the edges that go to an unvisited node are called discovery edges while the edges that go to an already visited node are called block edges.



AIM :

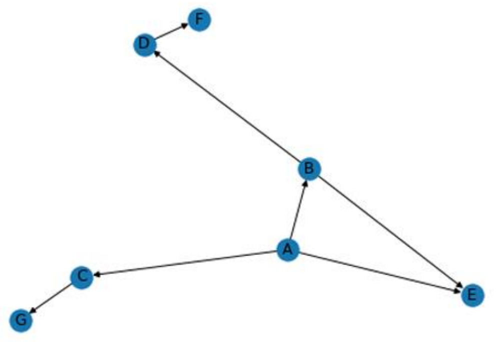
To implement a depth-first search problem using Python.

SOURCE CODE:

```
import networkx as nx

#FUNCTION TO SOLVE DFS
def solveDFS(graph, v, visited) :
  visited.add(v)
  print(v, end=' ')
  for neighbour in graph[v] :
    if neighbour not in visited :
      solveDFS(graph, neighbour, visited)
 g = nx.DiGraph()

#CREATE A GRAPH USING NETWORKX
g.add_edges_from([('A','B'),('A','C'),('C','G'),('B','D'),('B','E'),('D','F'),('A','E')]) # Add edges for th
 at graph
nx.draw(g, with_labels=True) # Graph Visualization

#SOLVE DFS FOR THAT GRAPH
print("Following is DFS from (starting from vertex A)")
visited = set()
solveDFS(g, 'A', visited)
```

OUTPUT:

```
Following is DFS from (starting from vertex A)
A B D F E C G
```



RESULT:
Therefore, the implementation of depth-first search problem using Python is executed successfully and the output is verified.

RESHMA T G