Experiment No : 03

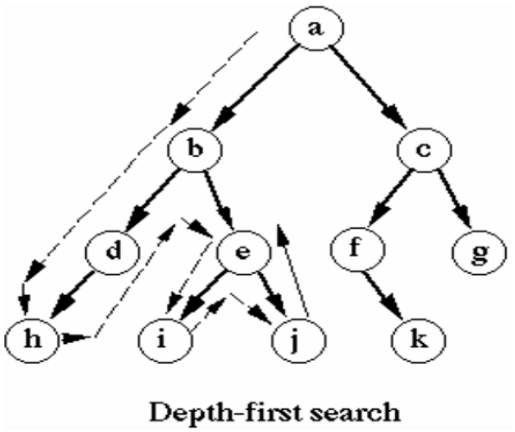
AIM: Program on uninformed search methods.

TITLE: To write program on uninformed search methods using DFS and BFS methods.

THEORY:

Uninformed search is a class of general-purpose search algorithms which operates in brute force-way. Uninformed search algorithms do not have additional information about state or search space other than how to traverse the tree, so it is also called blind search.

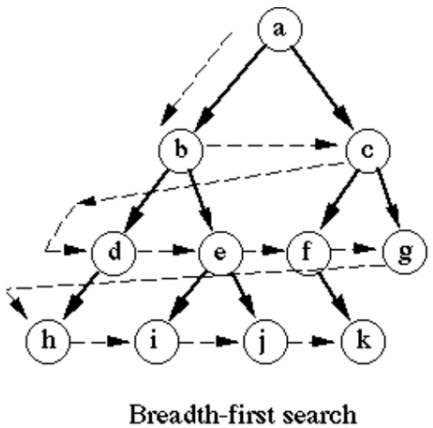
DFS:



Depth-first search

First, the search technique starts from the root node A and then goes to the branch where node B is present (lexicographical order). Then it goes to node D because of DFS, and from D, there is only one node to traverse, i.e., node H. But after node H does not have any child nodes, we retrace the path in which we traversed earlier and again reach node B, but this time, we traverse through in the untraced path a traverse through node E. There are two branches at node E, but let's traverse node I (lexicographical order) and then retrace the path as we have no further number of nodes after E to traverse. Then we traverse node J as it is the untraced branch and then again find we are at the end and retrace the path and reach node B and then we will traverse the untraced branch, i.e., through node C, and repeat the same process. This is called the DFS Algorithm.

BFS:



Breadth-first search

It starts from the root node A and then traverses node B. Till this step, it is the same as DFS. But here, instead of expanding the children of B as in the case of DFS, we expand the other child of A, i.e., node C because of BFS, and then move to the next level and traverse from D to G and then from H to K in this typical example. To traverse here, we have only taken into consideration the lexicographical order. This is how the BFS Algorithm is implemented.

DFS Program using Python:
Code:
Write code here
Output:
BFS Program using Python:
Code:
Write code here
Output:

Conclusion: We understood the concept of uninformed search methods. Hence we implemented the BFS and DFS using Python.