Depth First Tree Transversal (DFS)

The transversal of a tree using the Depth First Search algorithm follows the following basic rules:

1. Visit adjacent unvisited vertex. Mark it visited. Display it. Push it in a stack.
2. If no adjacent vertex found, pop up a vertex from stack.
3. Repeat Rule 1 and Rule 2 until stack is empty.

Algorithm to transverse a tree using DFS

* Given a tree T.
* Initialize a stack to contain the nodes as they’re visited. (This is unlike BFS that uses a queue)
* Pick a node, say S. Mark S as visited and put on the stack.
* Check to see if there’s any unvisited adjacent node from S.
* If yes, pick the node adjacent to S and repeat the process for S (i.e. Mark as visited, put on the stack and check if there are any adjacent nodes).
* If No, pop the stack and move to the next node to see if it has got unvisited nodes.
* This process is repeated until the stack is empty indicating that all nodes have been visited.