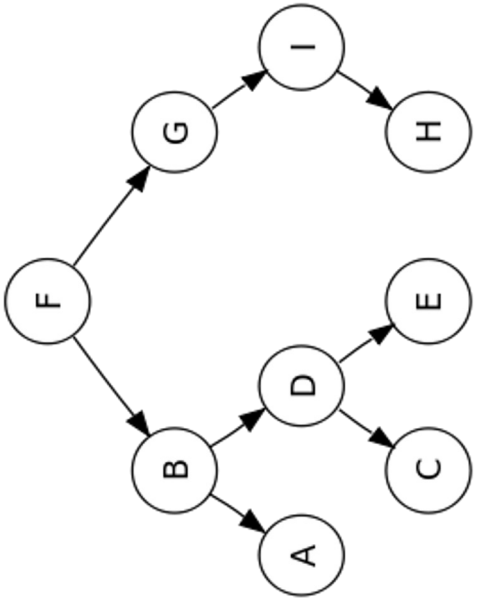
Tree traversal

Tree Traversal

"Tree traversal" means visiting all the nodes in a tree.

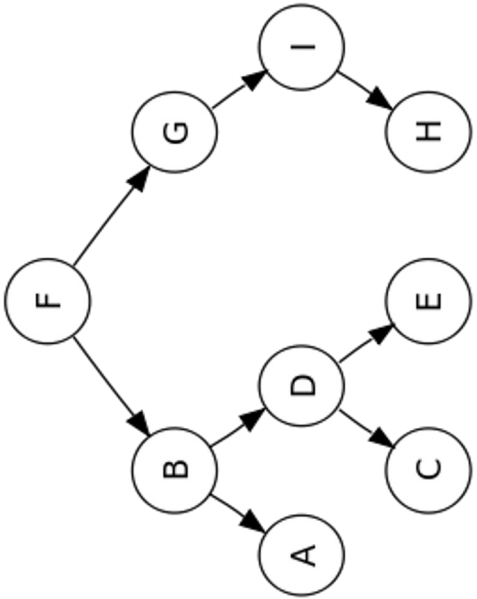
In what order will you visit the nodes?

There are many systematic ways to do it. We will look at 4, but there are others.



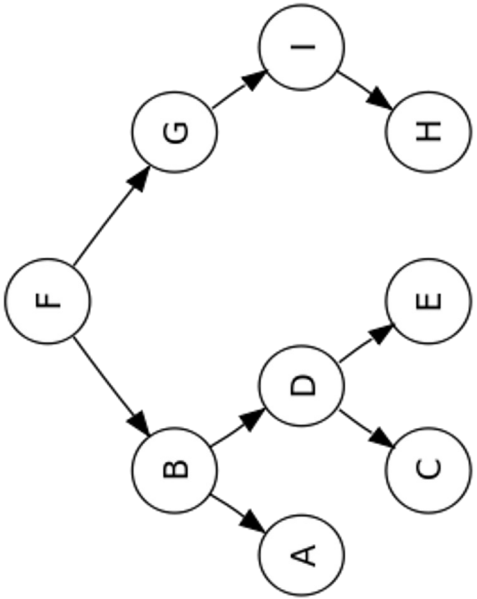
4 Tree Traversals

- **Pre-order**: visit node first, and then down subtree, and then up subtree
- **Post-order**: visit down subtree, and then up subtree, and then the node itself
- **In-order**: visit down subtree, and then the node, and then the up subtree
- **Level-order**: left-to-right, bottom-to-top



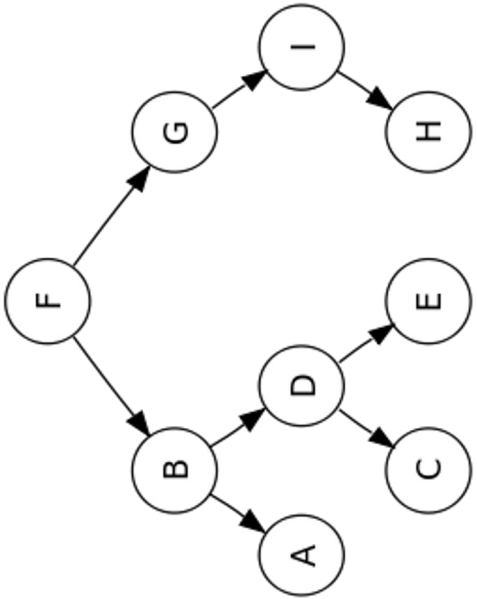
Pre-order:

- "pre" because we visit a node before visiting down subtree and up subtree
- Can be implemented recursively



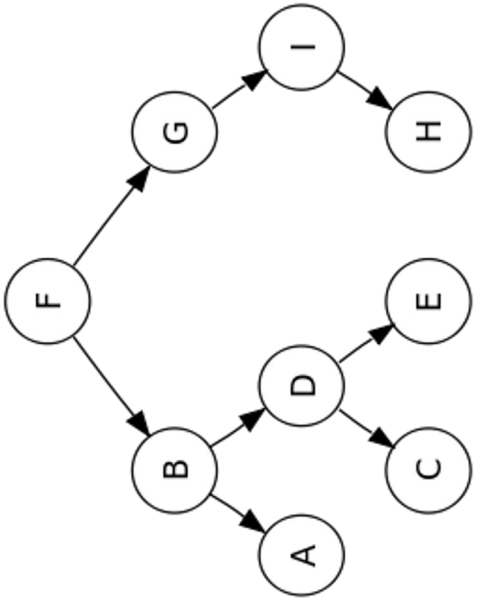
Post-order:

- "post" because we visit a node after visiting its down subtree and up subtree
- Can be implemented recursively



In-order:

- We visit a node in-between visiting its down subtree and up subtree
- Can be implemented recursively



Level-order:

- Left-to-right, bottom-to-top
- In this example, the level-order traversal is:
  - FBGADICEH
- Can be implemented using a loop and a queue