Tree Traversals Part 1

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by Christine Alvarado, Mia Minnes, and Leo Porter, 2015.

By the end of this video you will be able to…

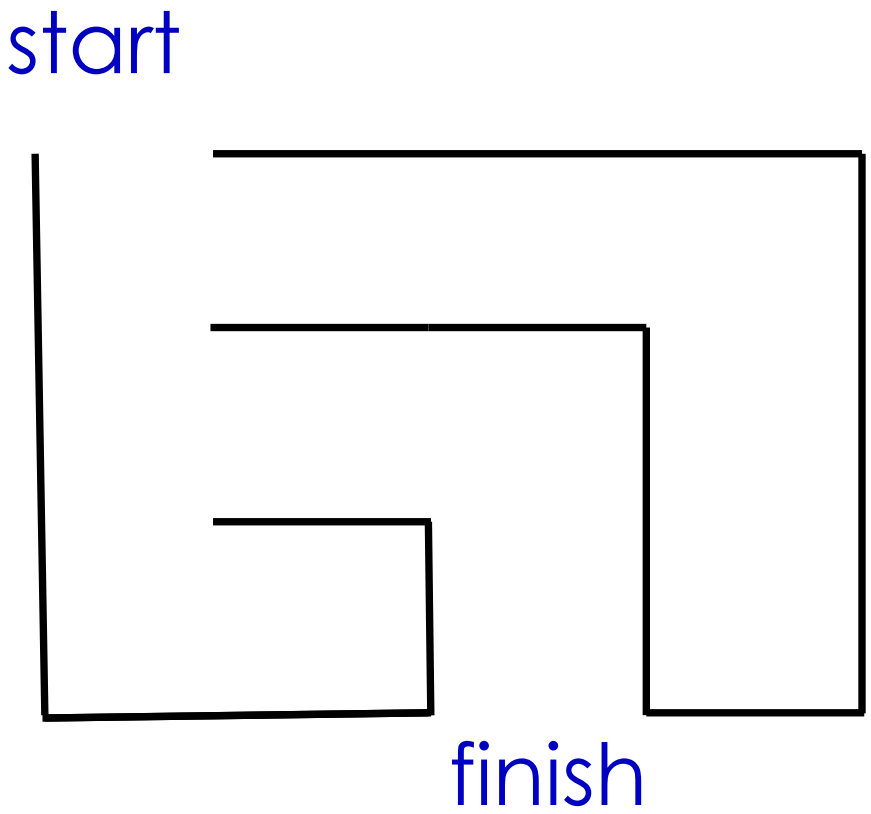
- Explain the need to visit data in different orderings
- Author a preorder traversal

Traversals

Traversals

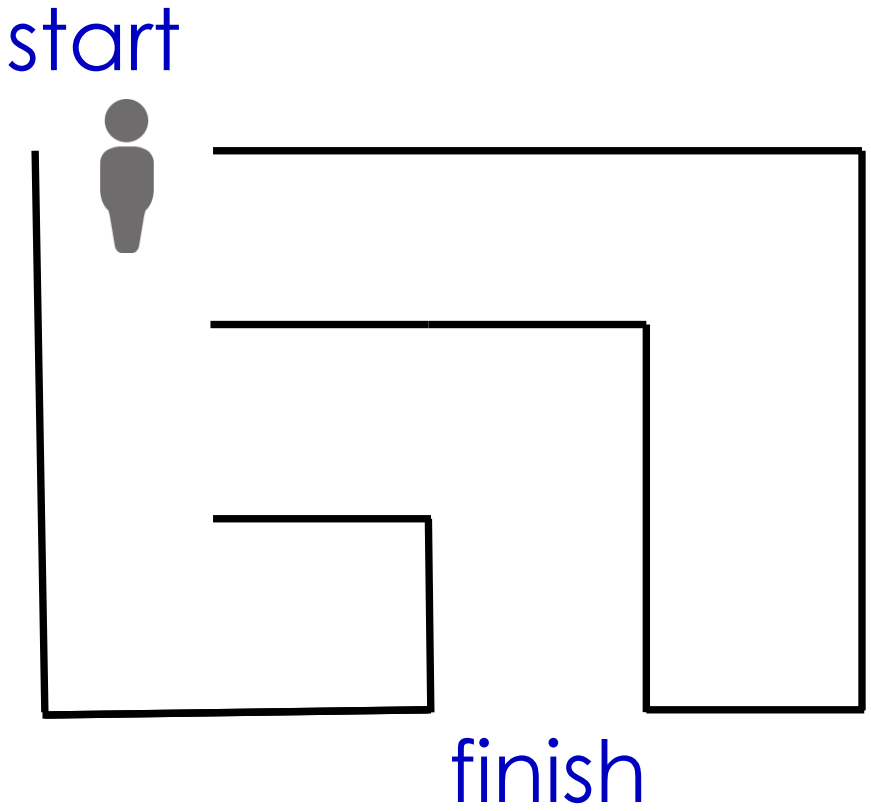
Warning: These first examples are really graphs. We'll visit graphs in detail in the next course.

Maze Traversal

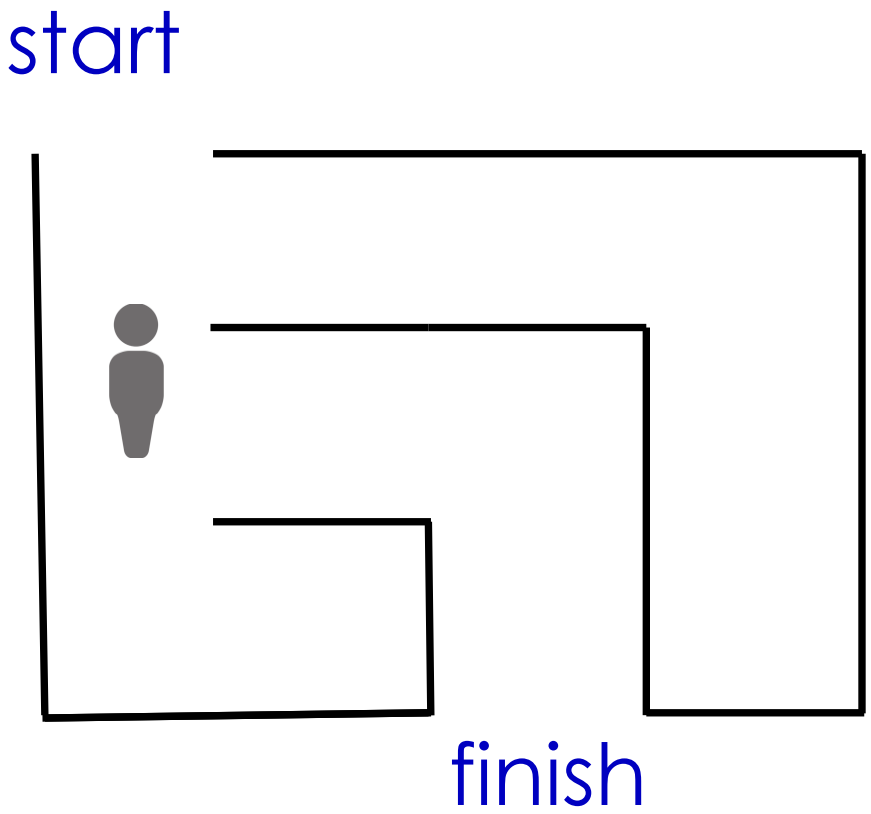


Imagine this is a hedge maze

Maze Traversal



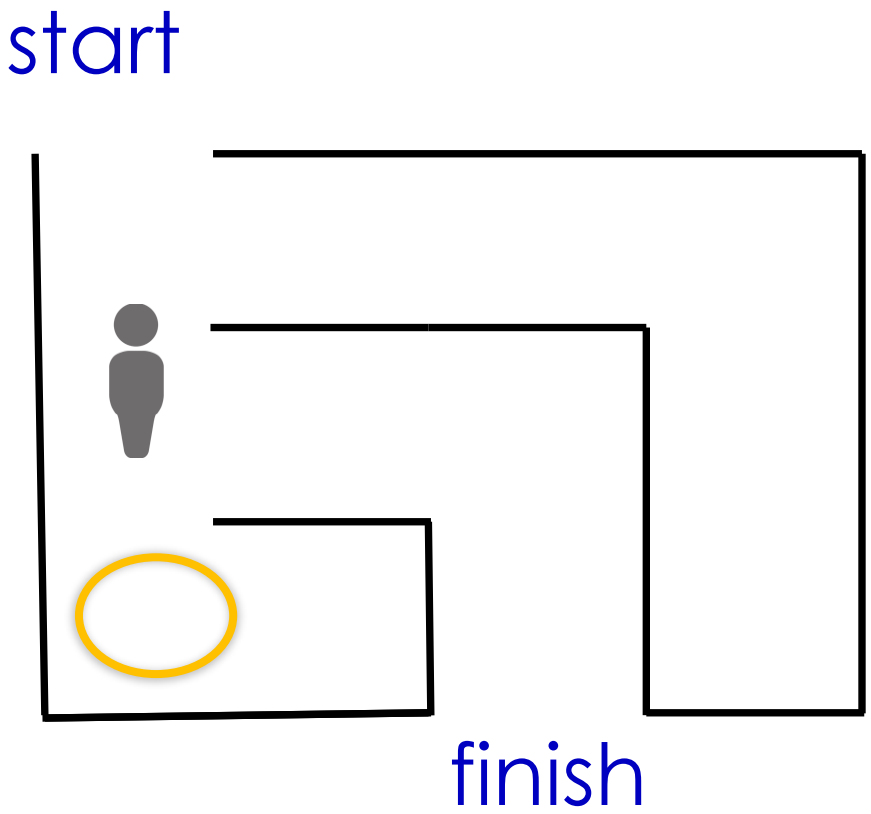
Maze Traversal



What's my next step?

Maze Traversals

What's my next step?



Maze Traversal

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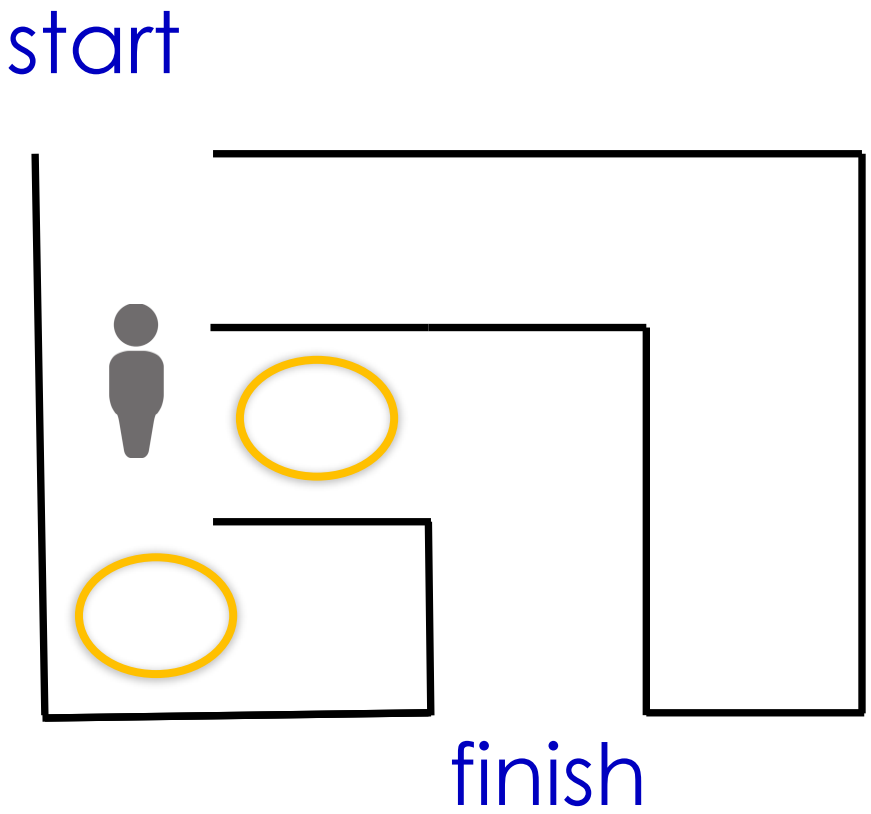

Maze Traversal

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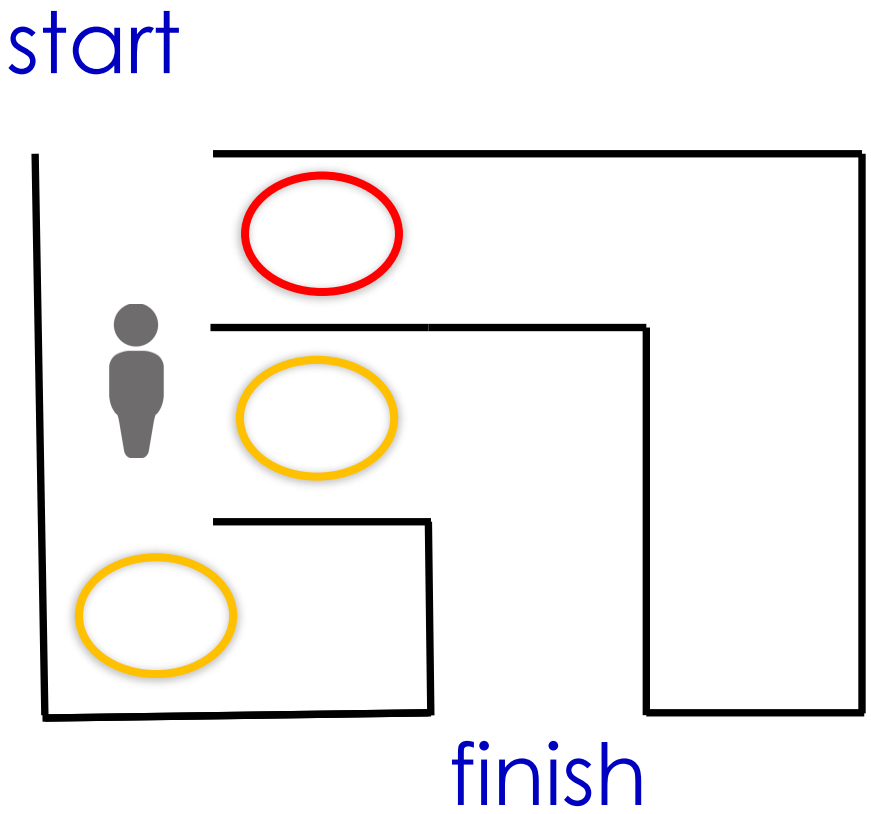
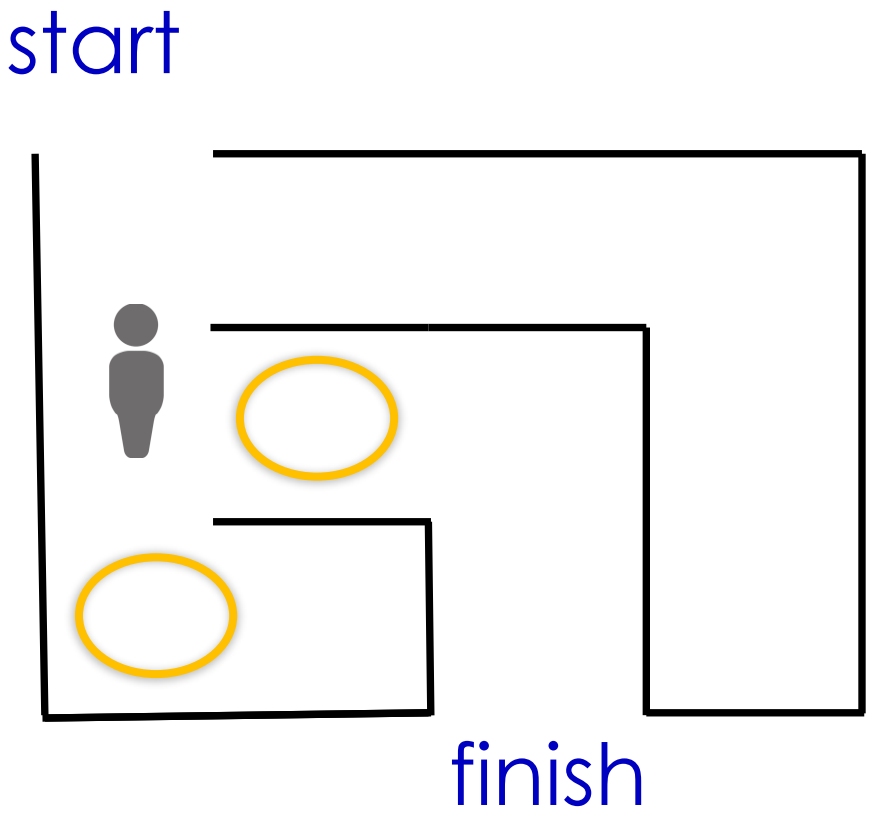


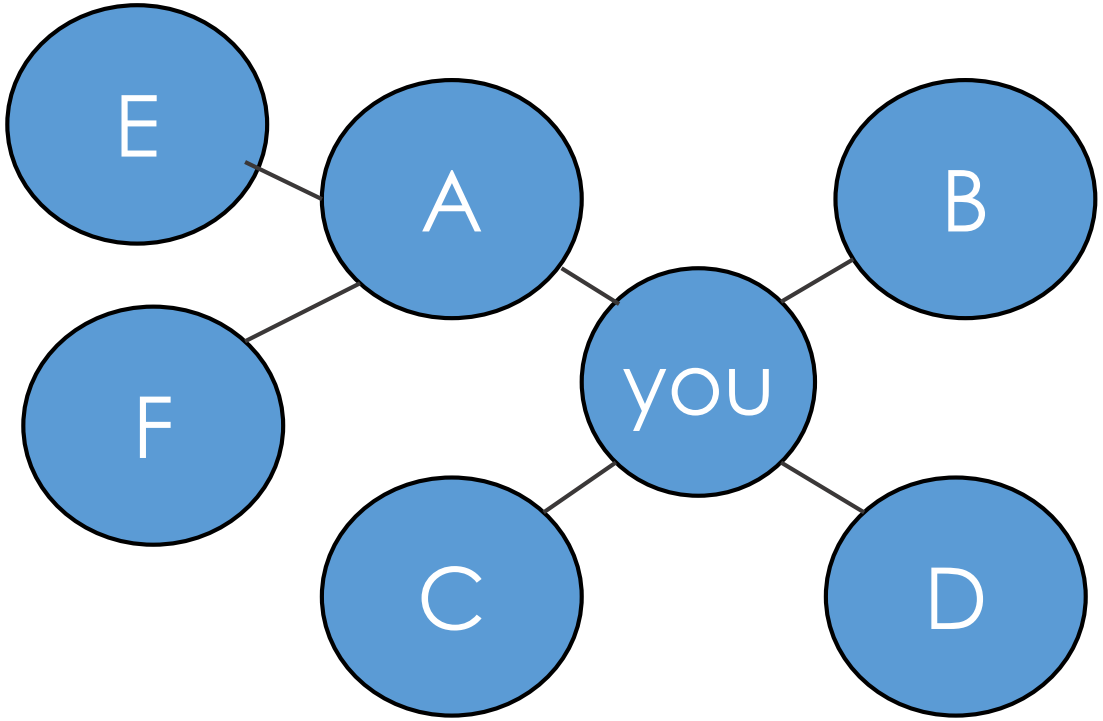
Maze Traversal



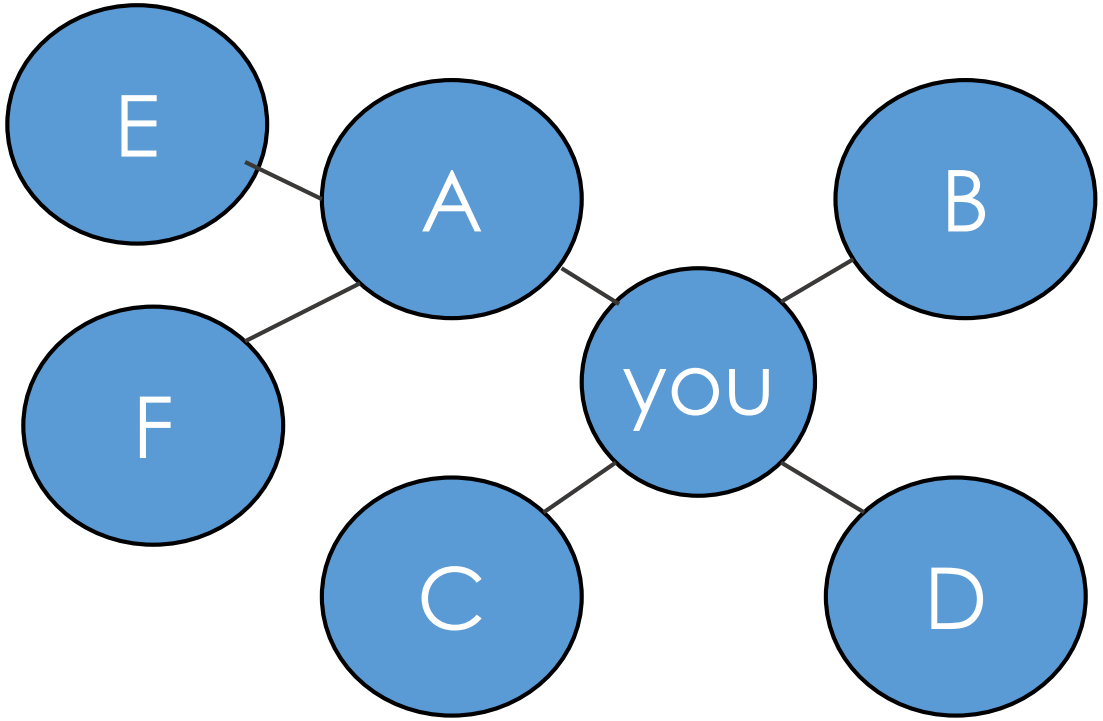
Mazes benefit from "Depth First Traversals"

Social Network

How closely are you connected with D?



Social Network



How closely are you connected with D?

Suppose you have a list of your friends and each of your friends have lists

Social Network

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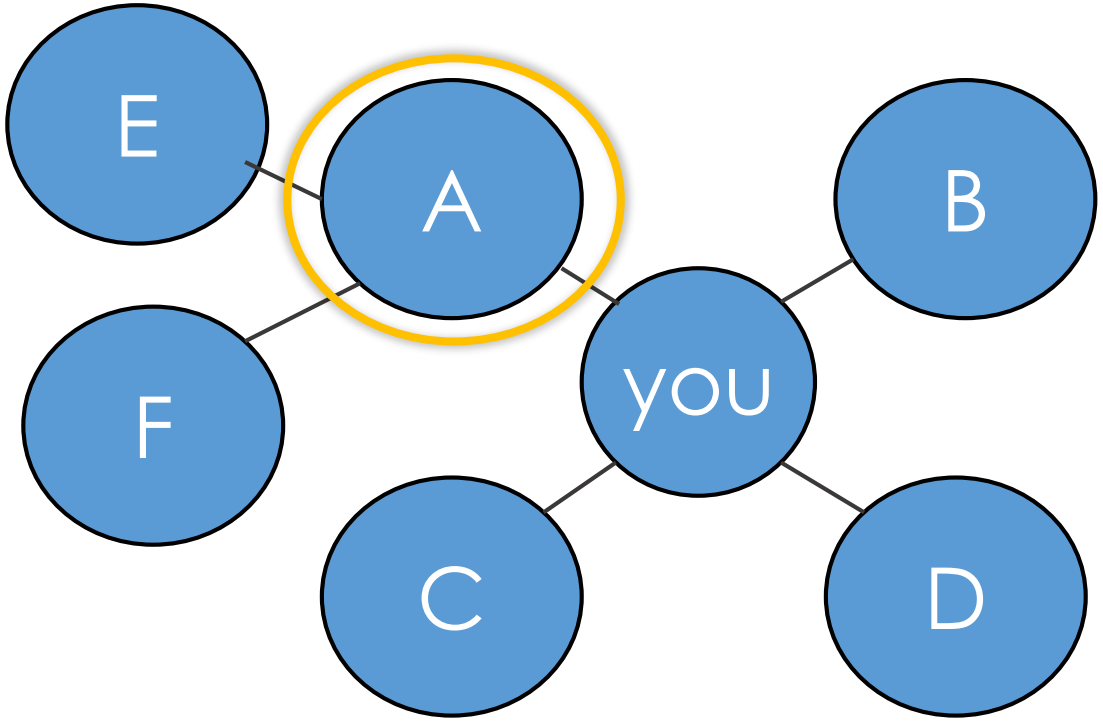
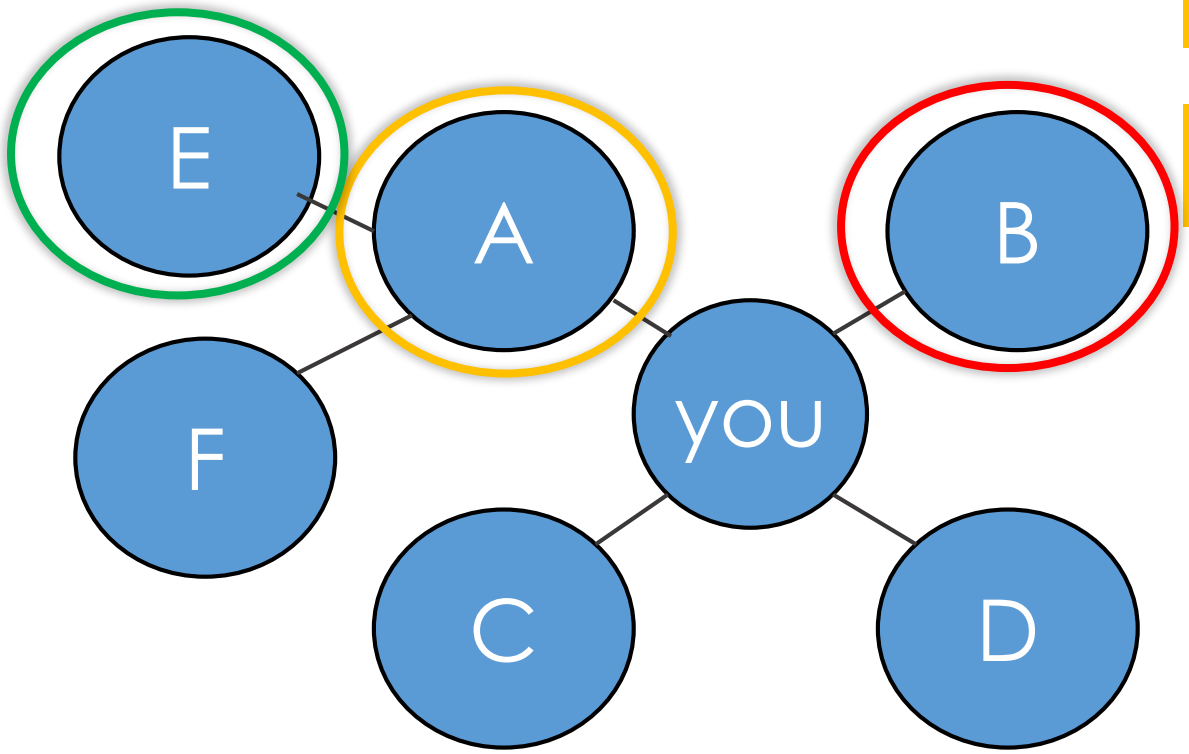


Social Network



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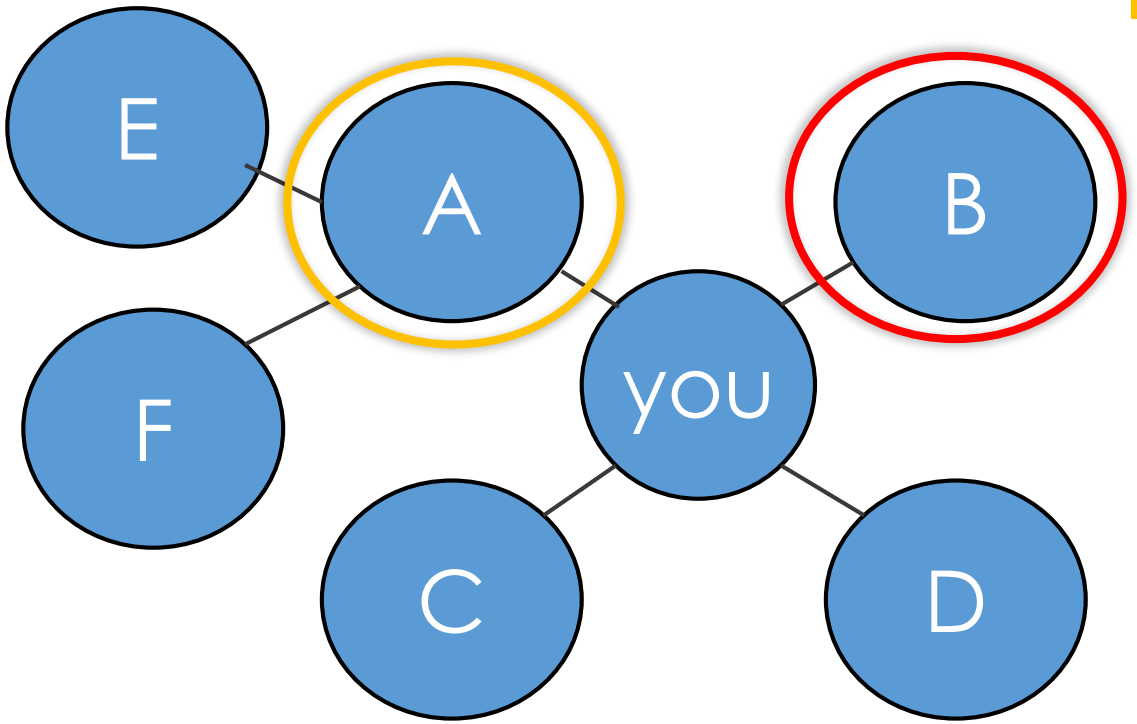
What's my next step?

Social Network



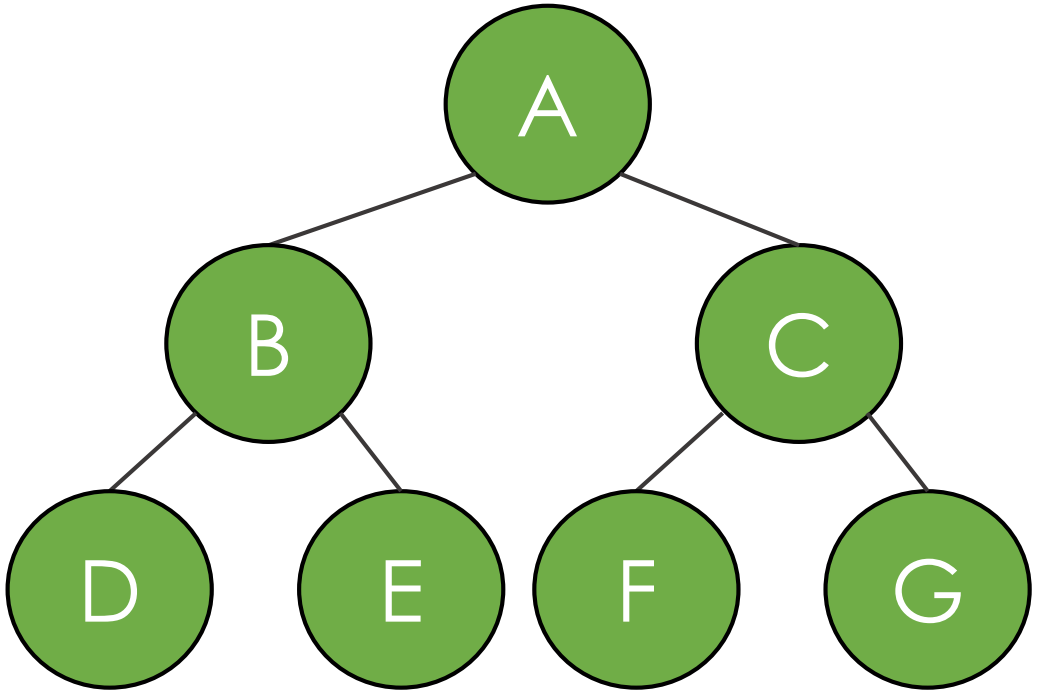
How closely are you connected with D?

This problem benefits from "Breadth First Traversals"

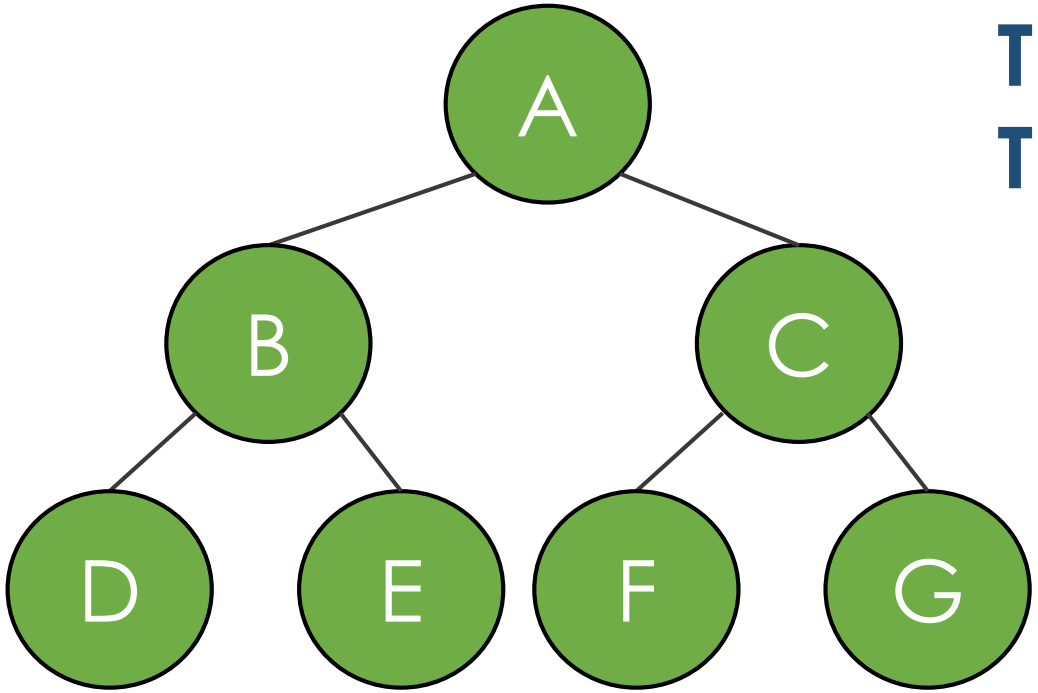
Traversals

Bottom line: Order we visit matters and we'll make choices based on our needs

Tree Traversals

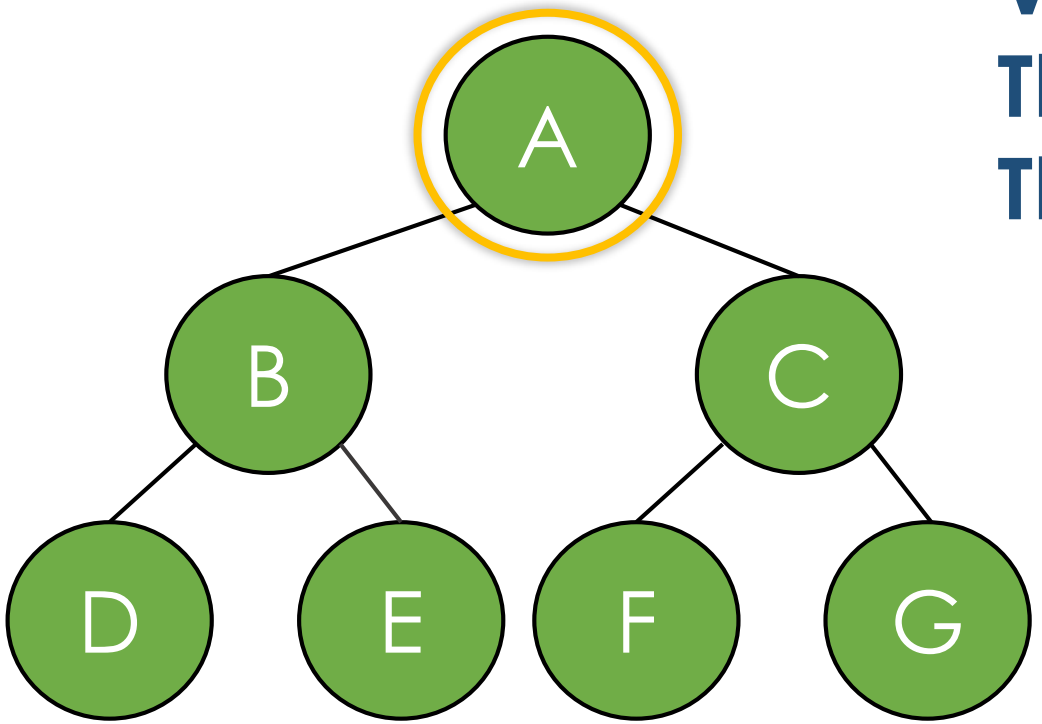


Preorder Traversal



Idea:
Visit yourself
Then visit all your left subtree
Then visit all your right subtree

Preorder Traversal



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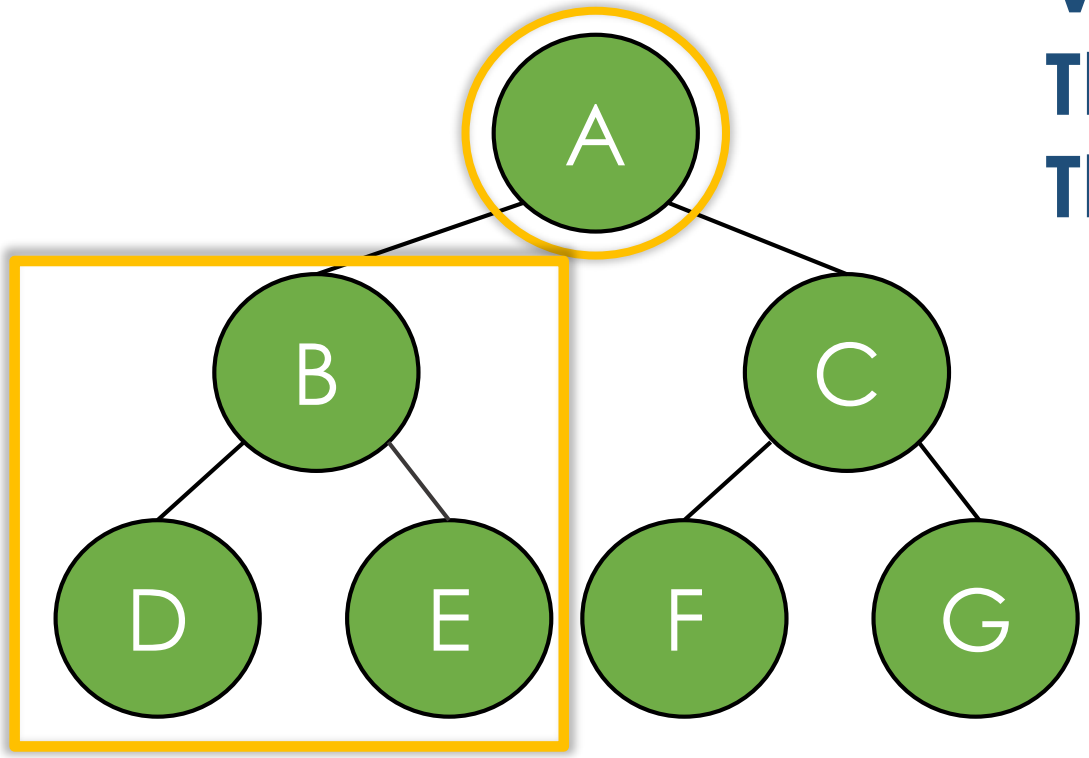

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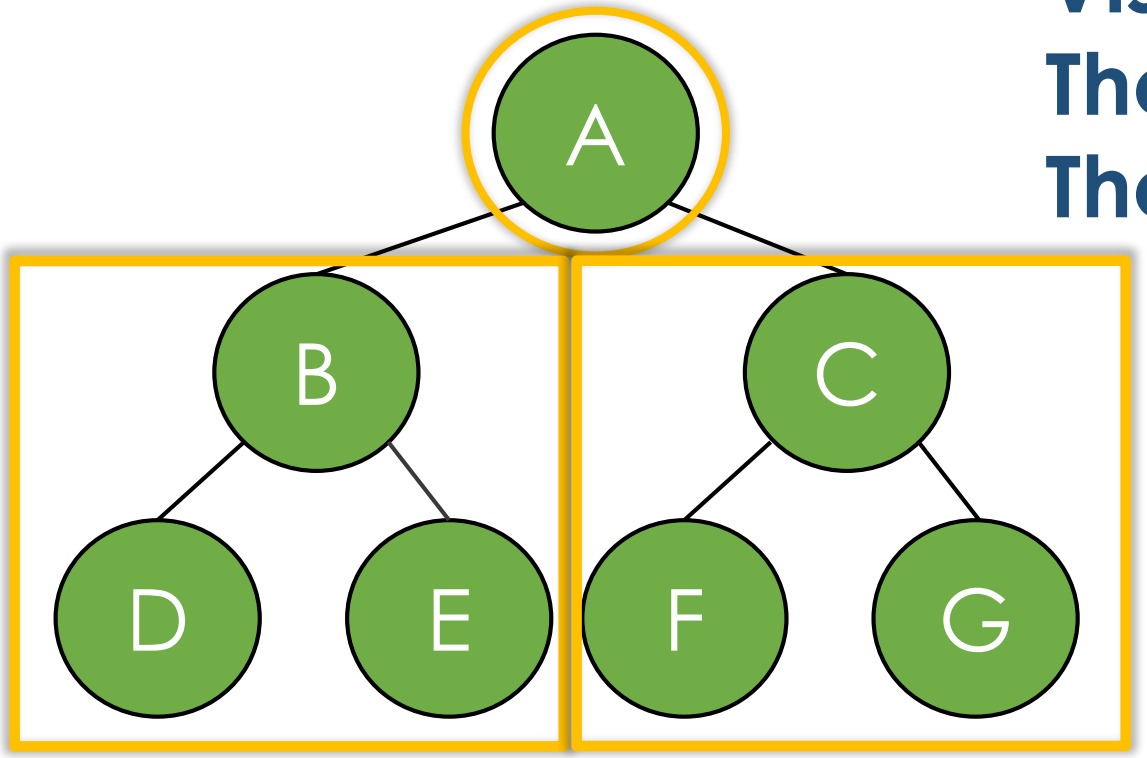

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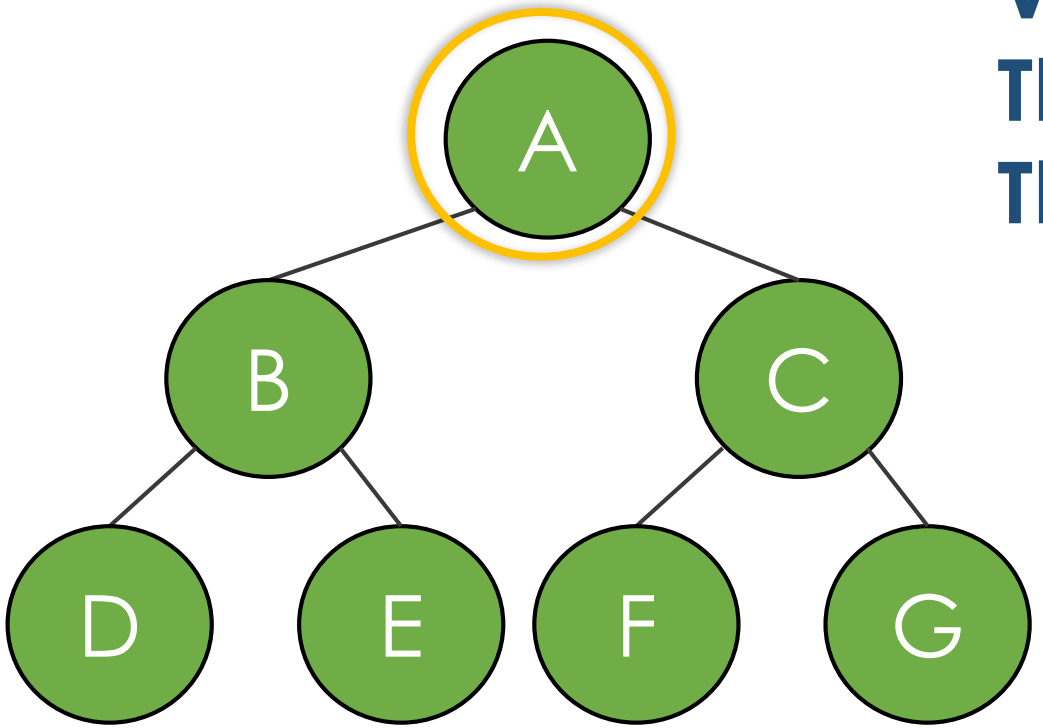

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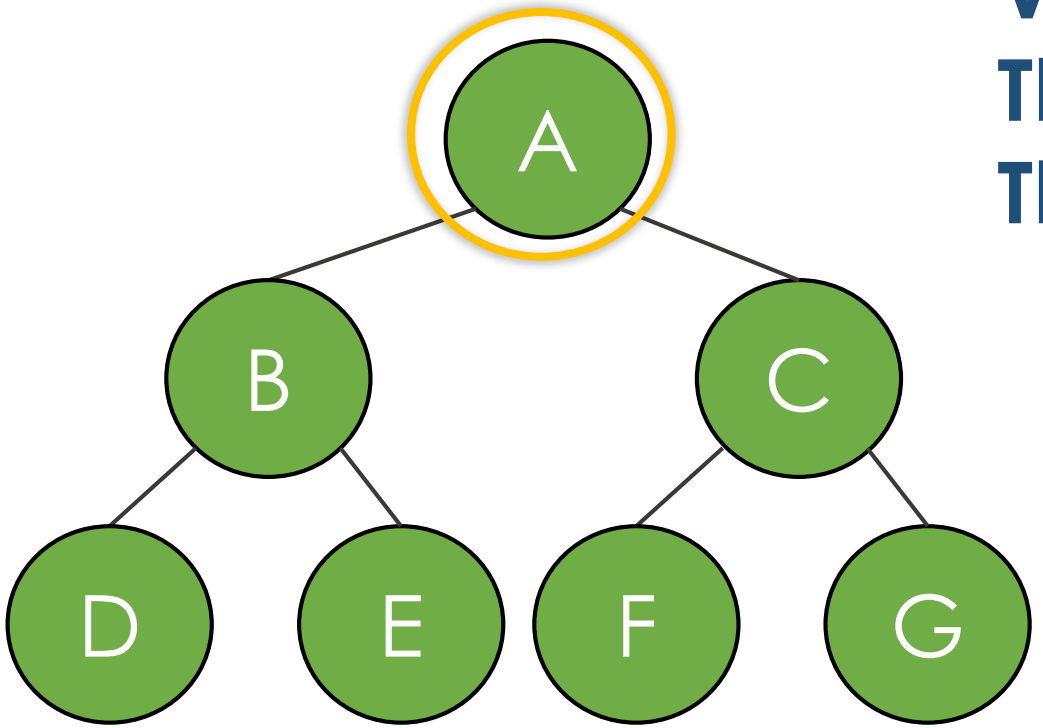

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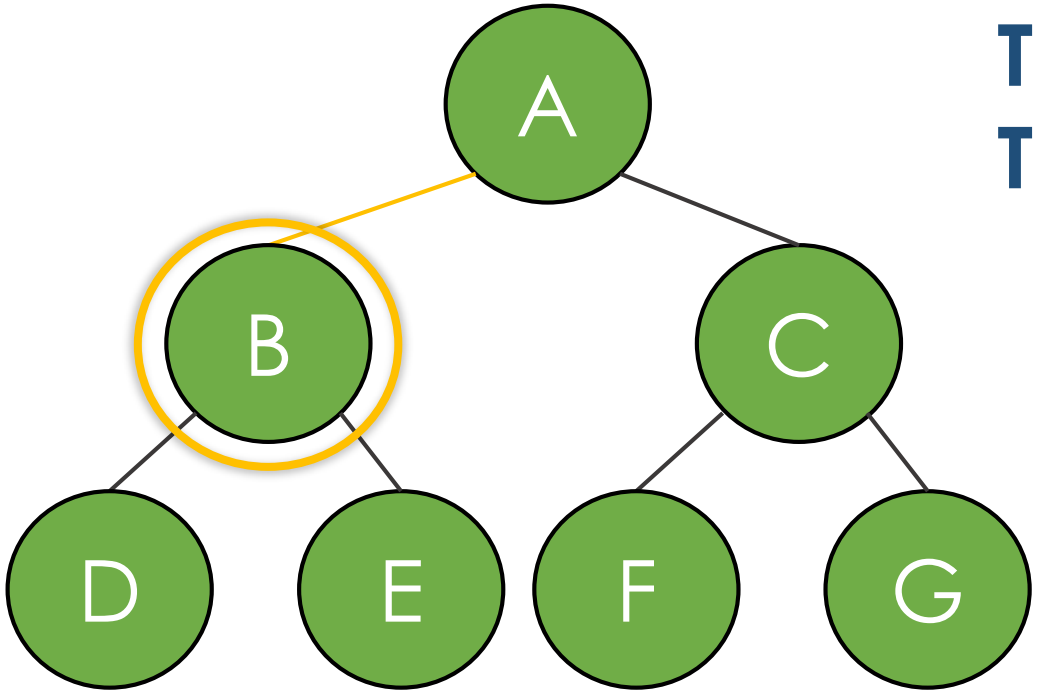
Preorder Traversal



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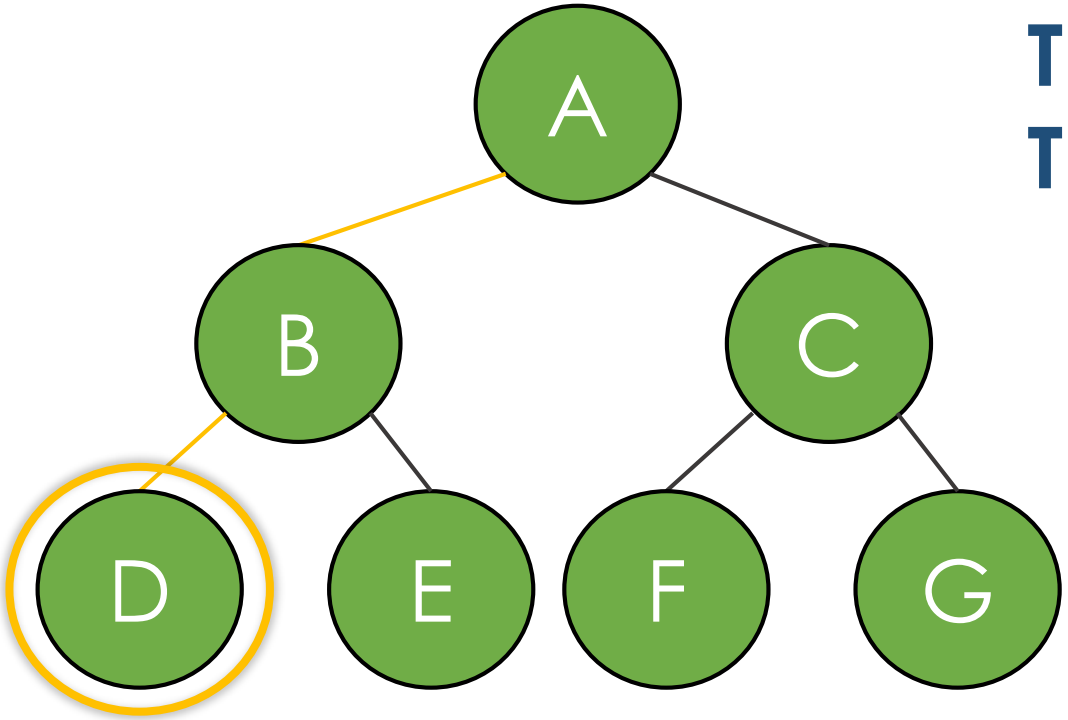

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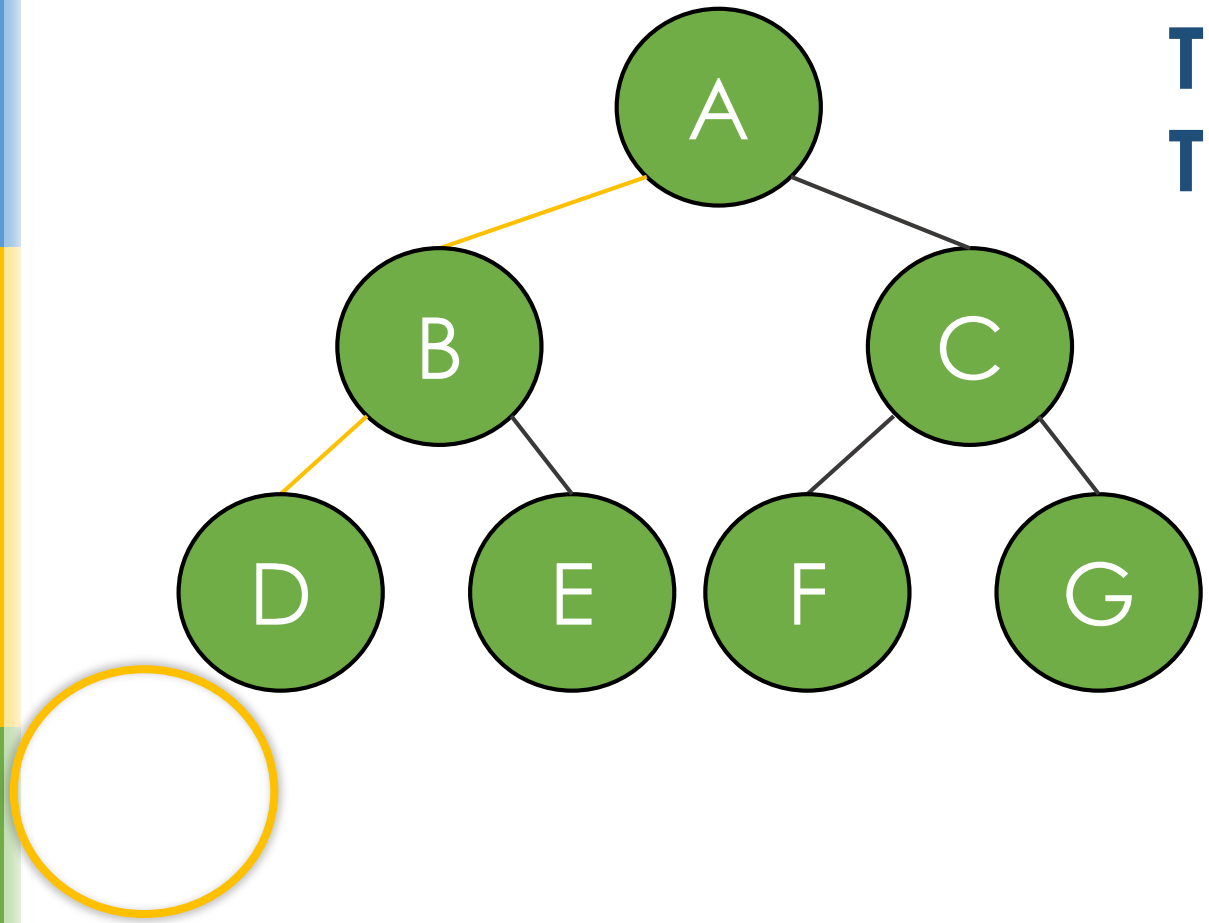

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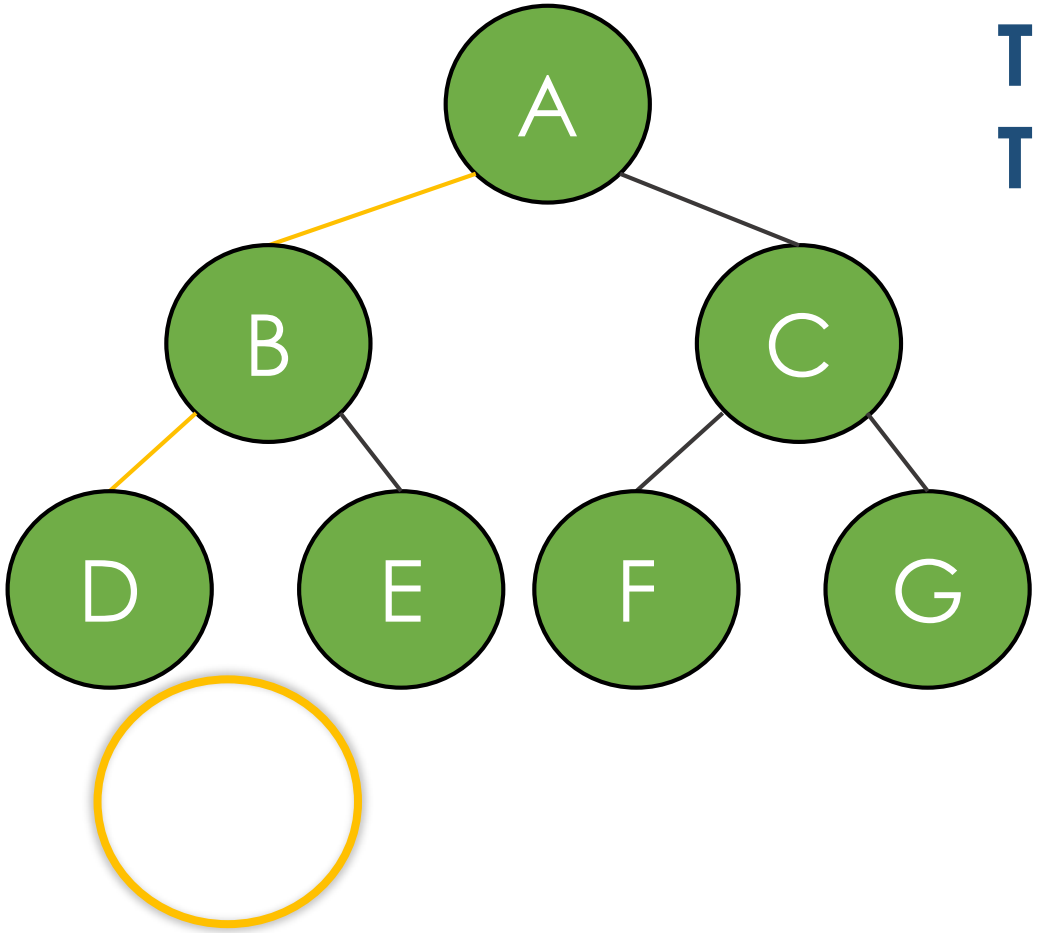

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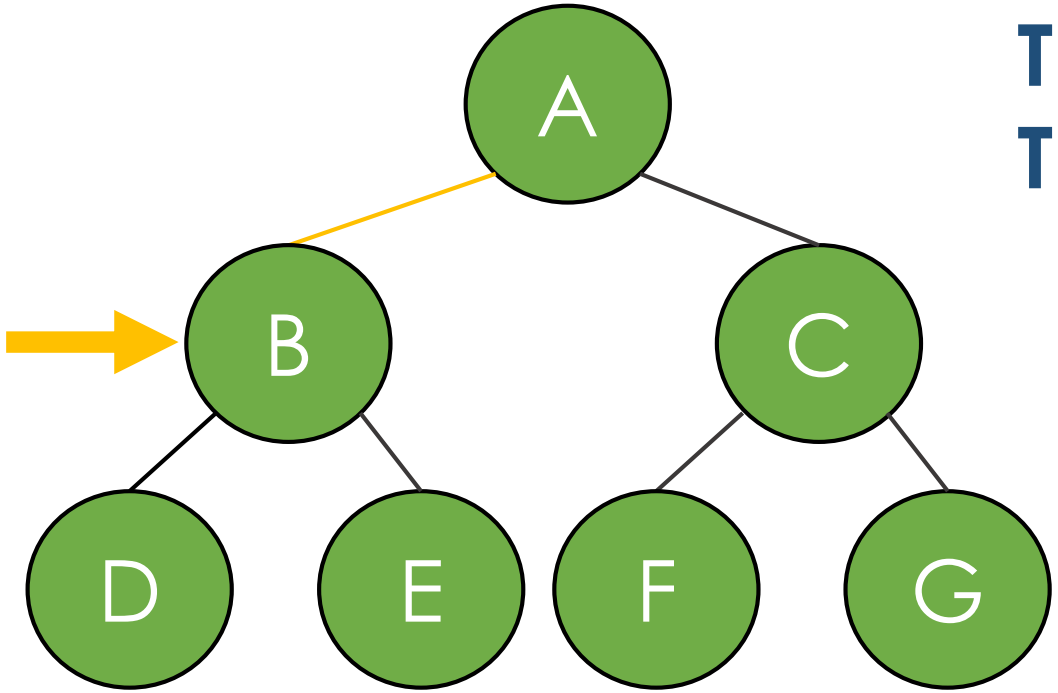

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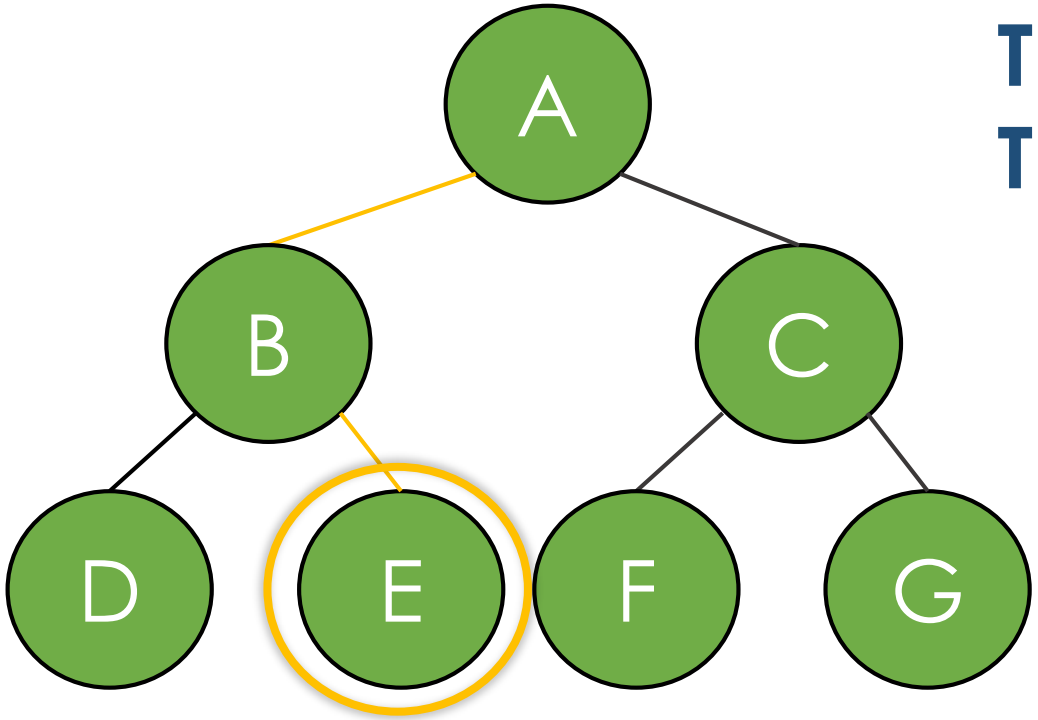

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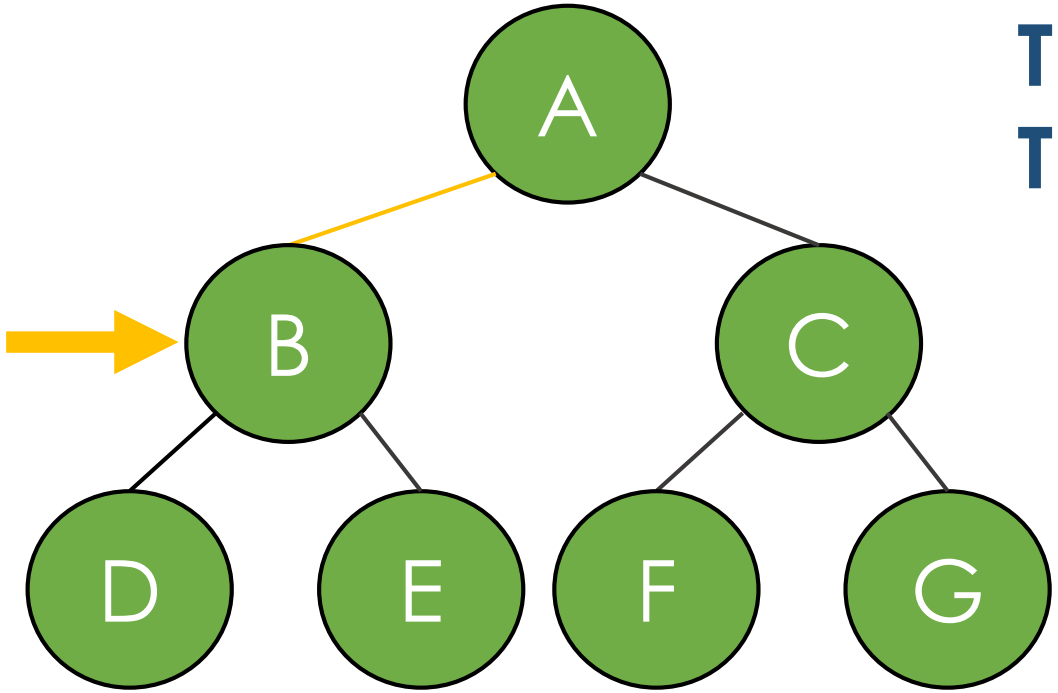

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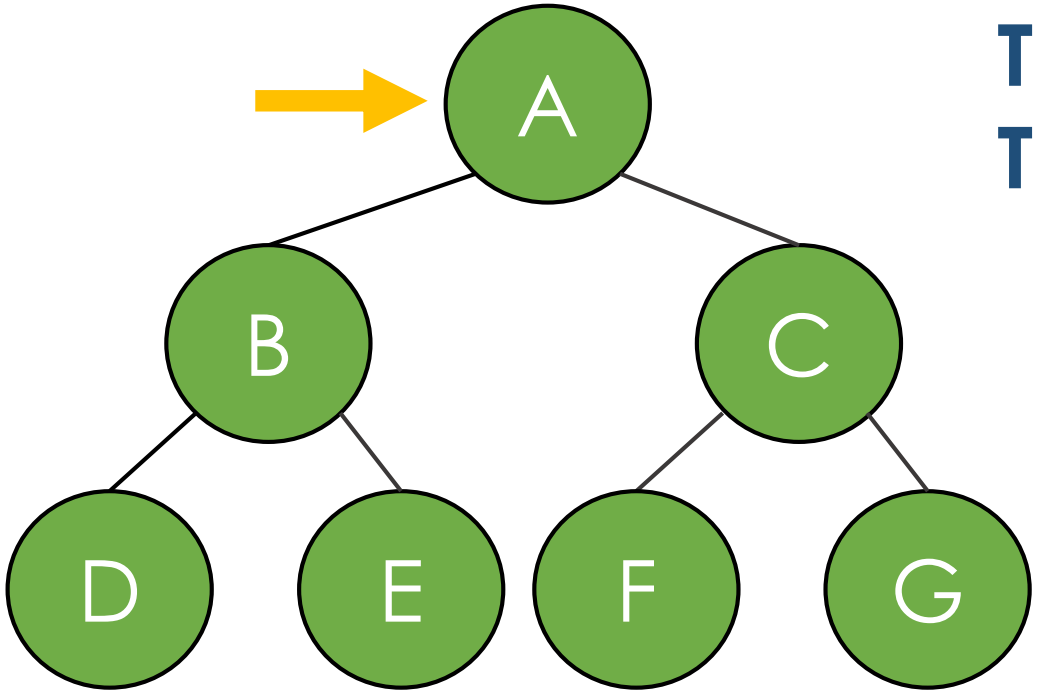

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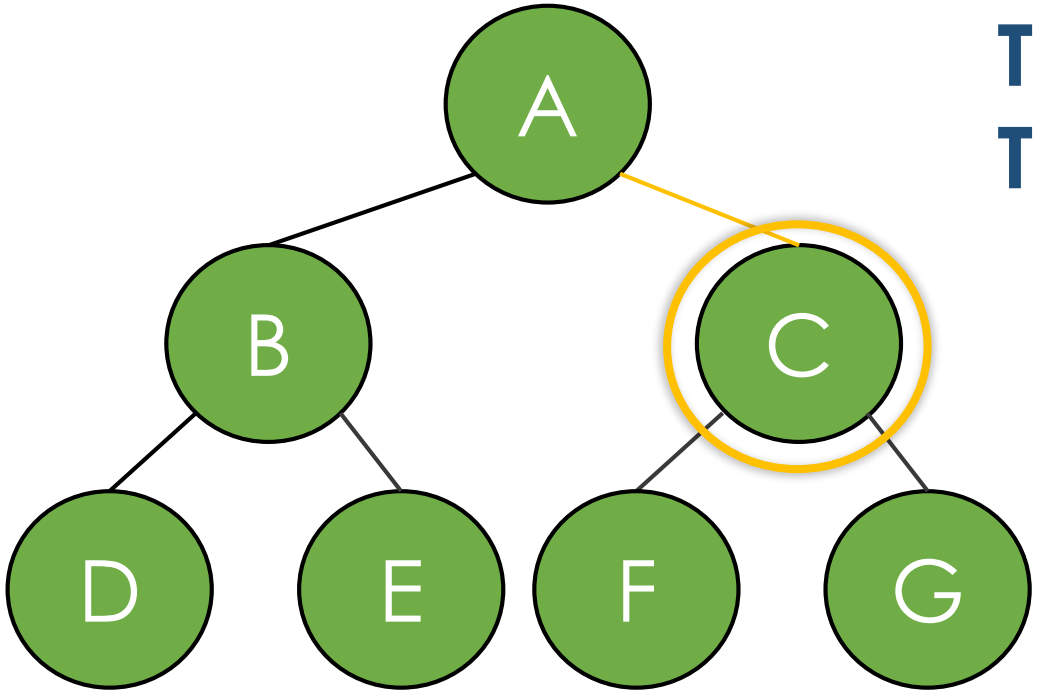

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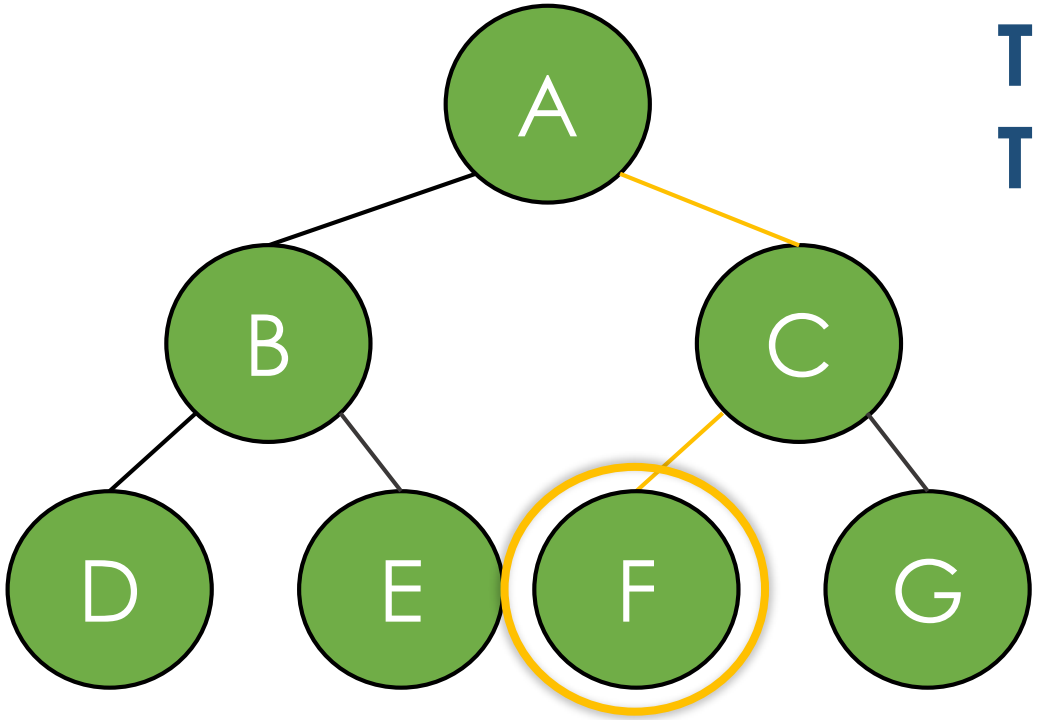

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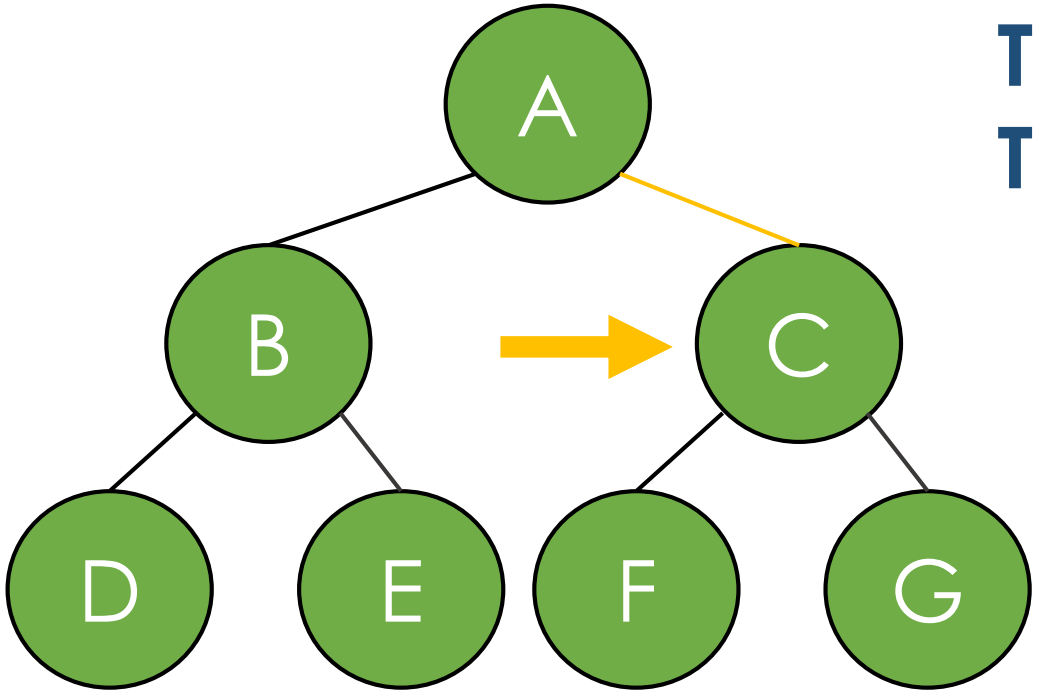

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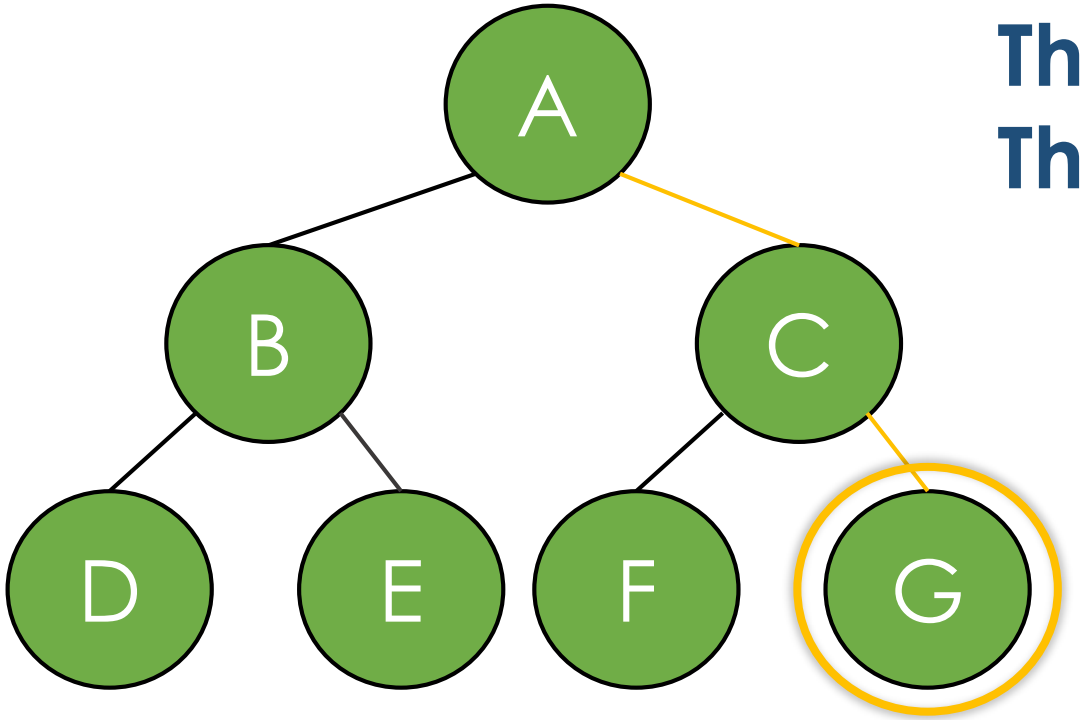

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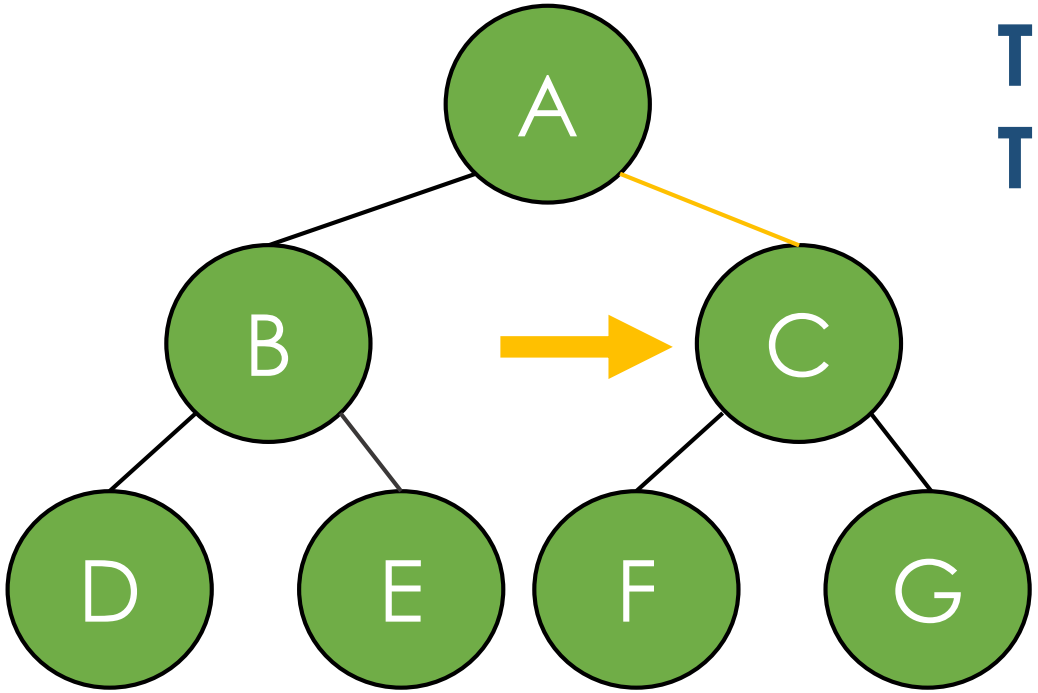

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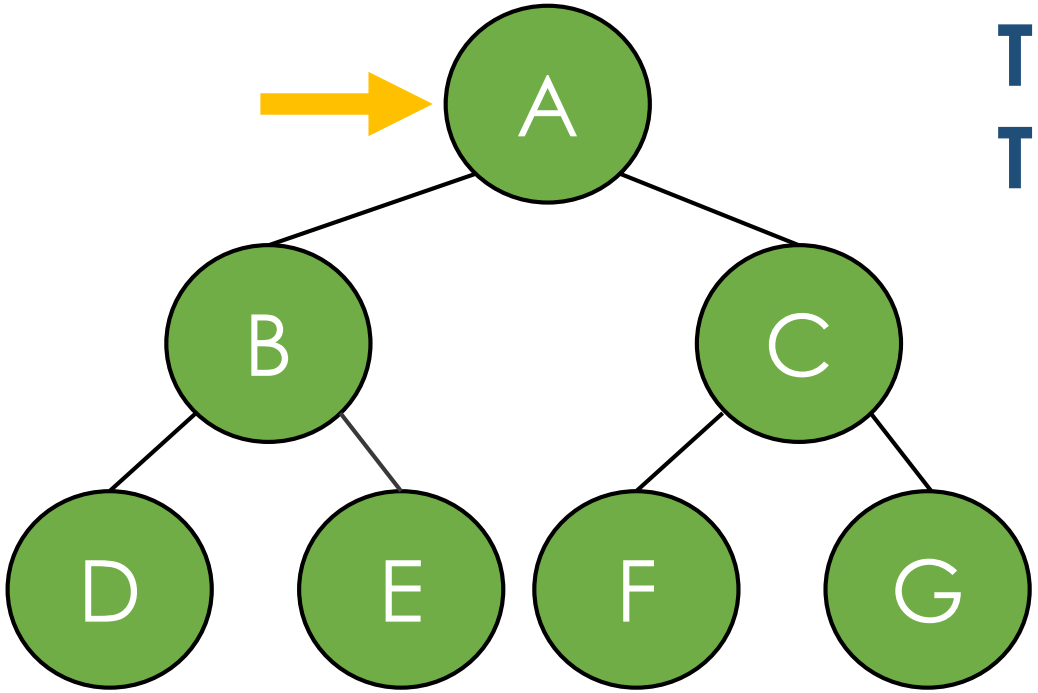

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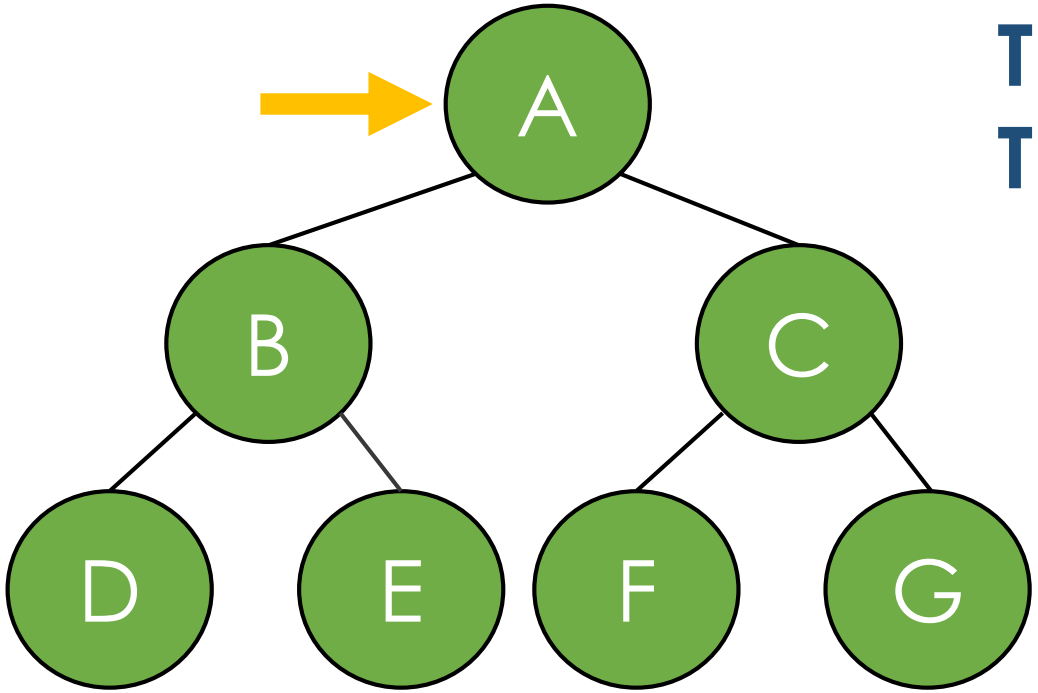

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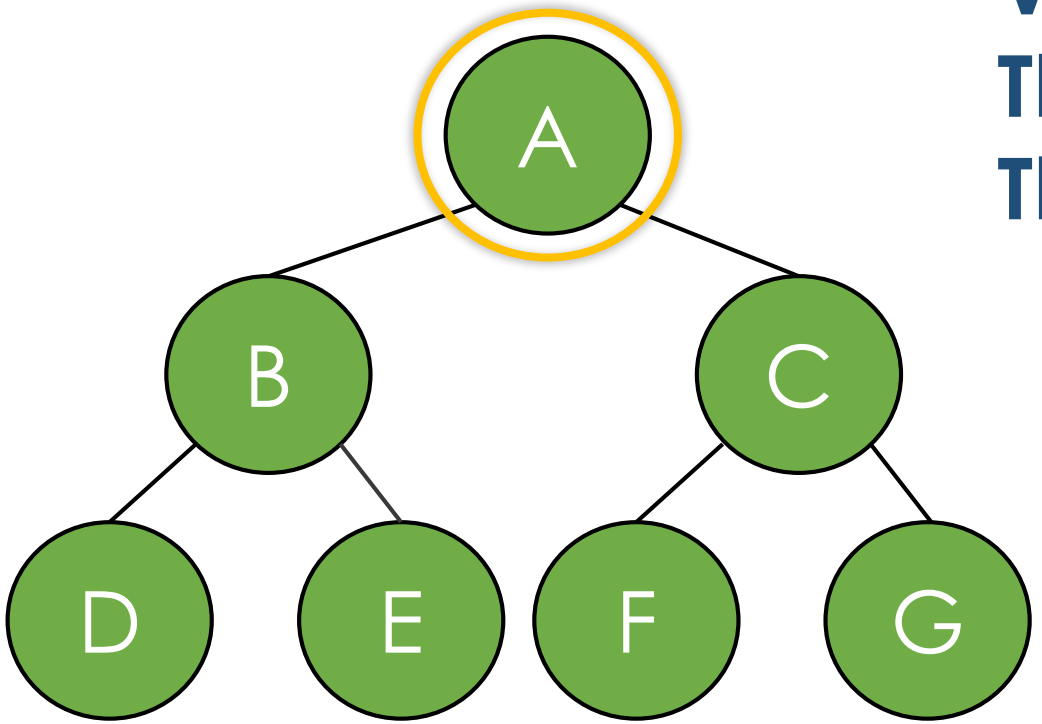
Recursion will help us do this!

Preorder Traversal



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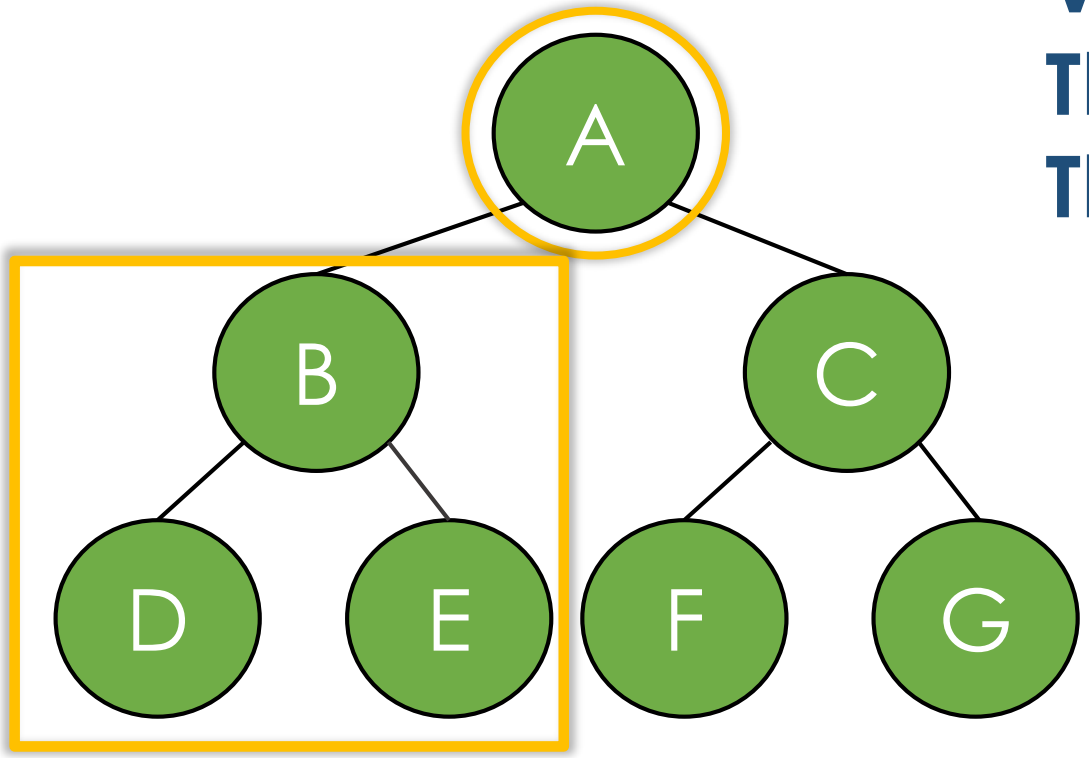

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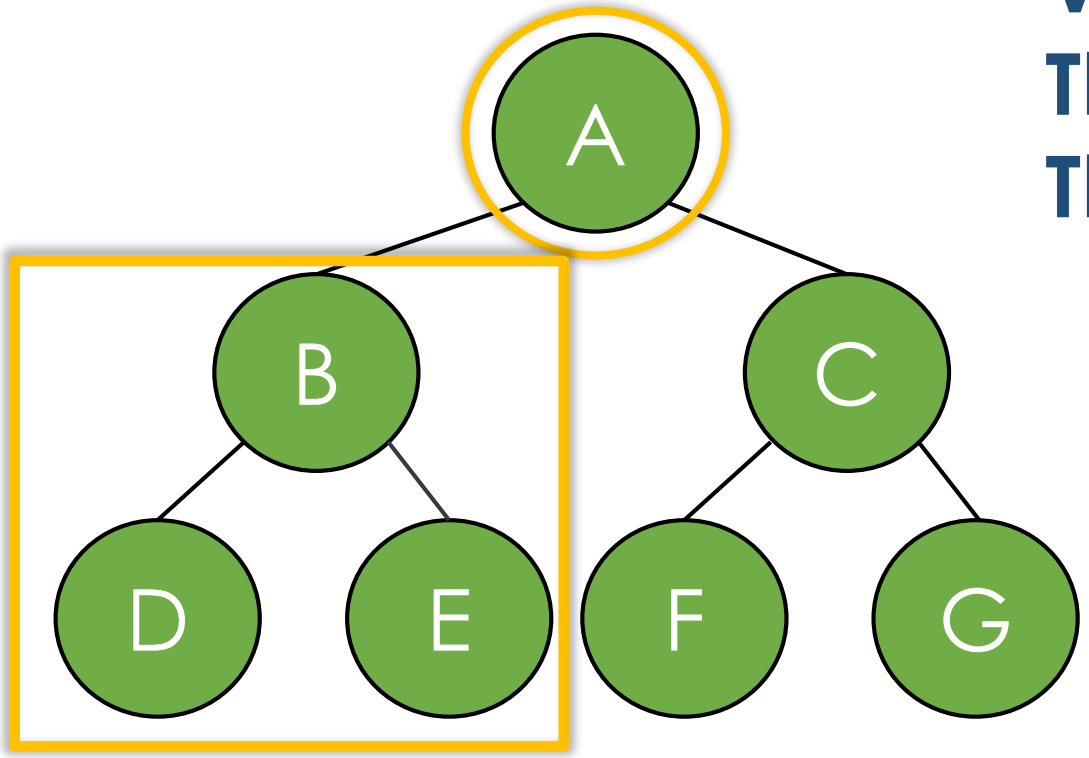

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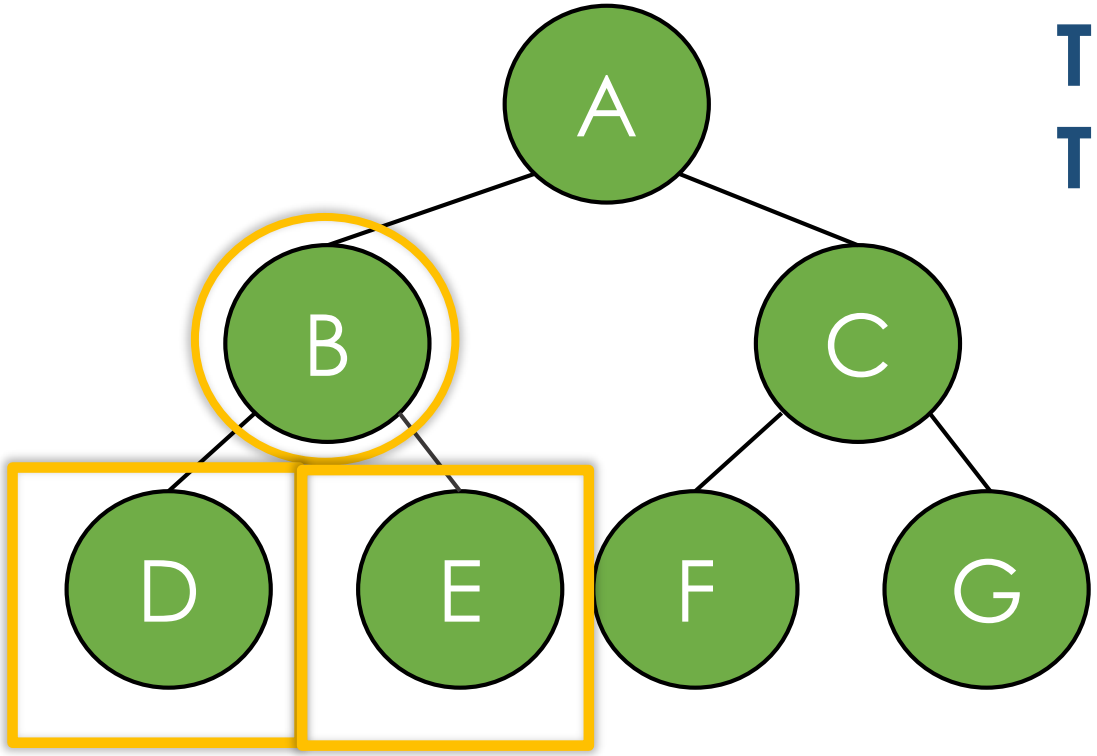

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```java
public class BinaryTree<E> {
  TreeNode<E> root;
  //...
  private void preOrder(TreeNode<E> node) {
    if(node!= null) {
      node.visit();
      preOrder(node.getLeftChild());
      preOrder(node.getRightChild());
    }
  }



}
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    }
  }
  public void preOrder() {
    this.preOrder(root);
  }
}
```