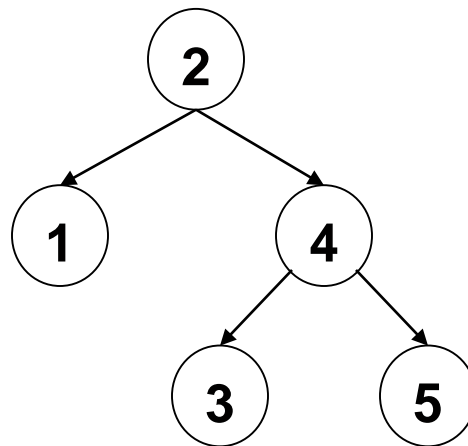


Binary Search Tree

- A **binary search tree** (BST), is a binary tree where for *every* node n in the tree:
 - n 's value is **greater** than all the values in its **left** subtree.
 - n 's value is **less** than all the values in its **right** subtree.
 - both n 's left and right subtrees are binary search trees.



Binary Search Tree

- **Problem**: How many possible BSTs containing values 1, 2, and 3 have degenerate structure (i.e., each node in the BST has at most one child)?
- **Solution**: $3!$ ways to order 1, 2, and 3 for insertion

1, 2, 3

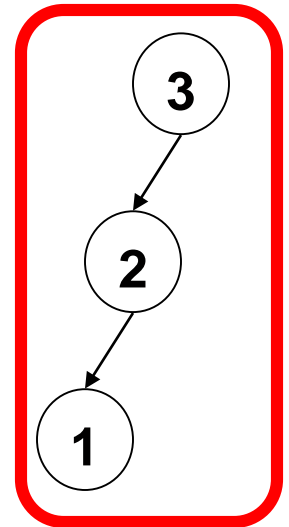
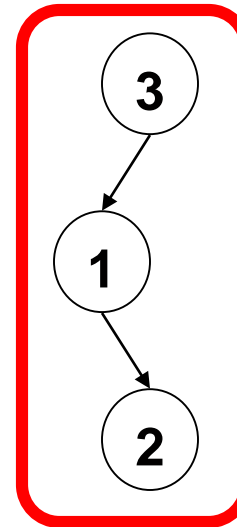
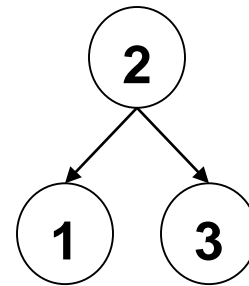
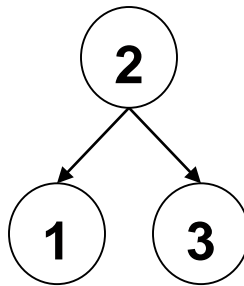
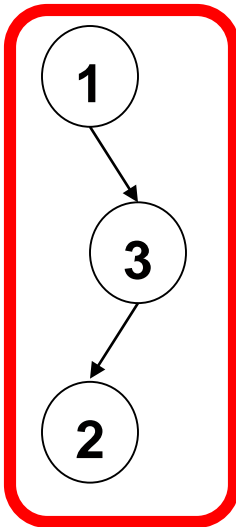
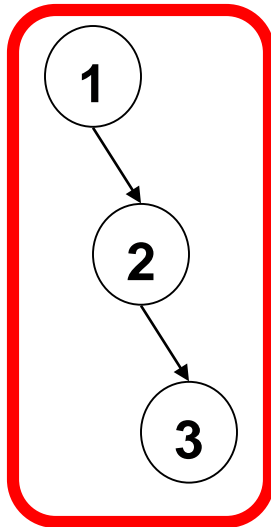
1, 3, 2

2, 1, 3

2, 3, 1

3, 1, 2

3, 2, 1



There are 4 degenerate BSTs possible.