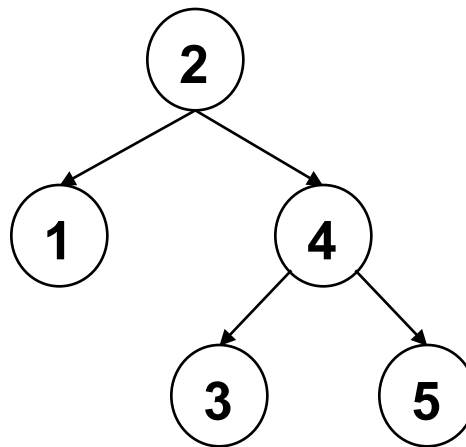# Combinatorics

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)?

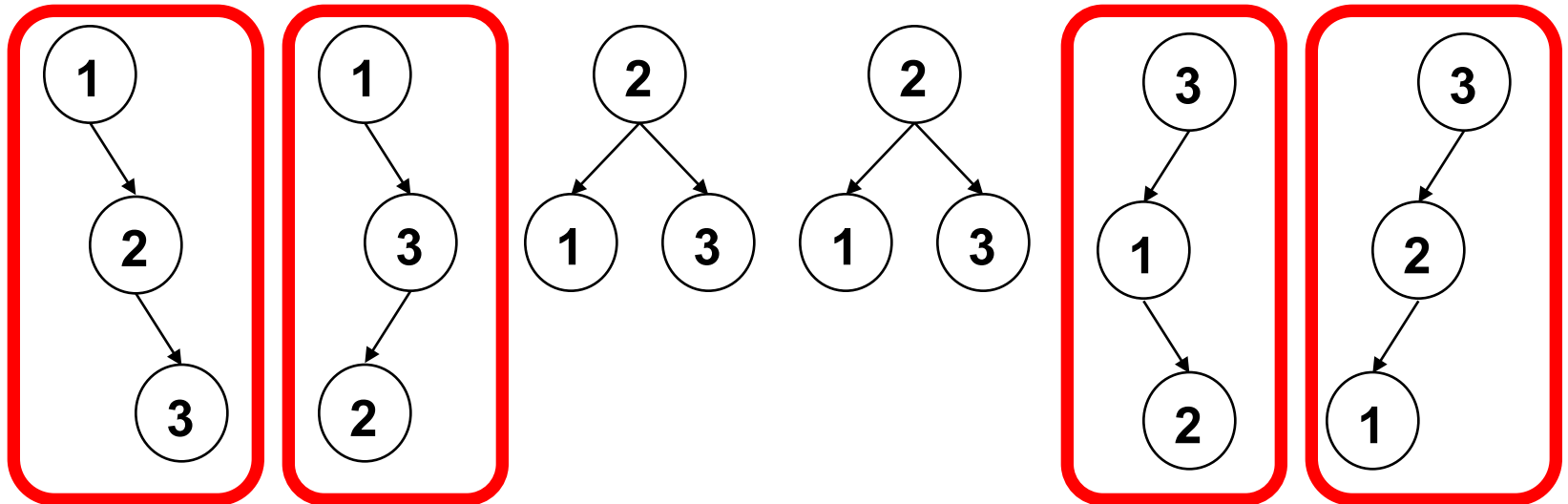- **Solution**: 3! ways to order 1, 2, and 3 for insertion

There are 4 degenerate BSTs possible.