AlgoExpert

Quad Layout | C# | 12px | Sublime | Monokai | 00:00:00

Prompt | Scratchpad | Our Solution(s) | Video Explanation | Run Code

Solution 1 | Solution 2 | Solution 3

```
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public class Program {
  // Upper Bound: O((n*(2n)!)/(n!(n+1)!)) time | O(n) space
  public static int NumberOfBinaryTreeTopologies(int n) {
    if (n == 0) {
      return 1;
    }
    int numberOfTrees = 0;
    for (int leftTreeSize = 0; leftTreeSize < n; leftTreeSize++) {
      int rightTreeSize = n - 1 - leftTreeSize;
      int numberOfLeftTrees = NumberOfBinaryTreeTopologies(leftTreeSize);
      int numberOfRightTrees = NumberOfBinaryTreeTopologies(rightTreeSize);
      numberOfTrees += numberOfLeftTrees * numberOfRightTrees;
    }
    return numberOfTrees;
  }
}

```