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

```cpp
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using namespace std;

// Upper Bound: O((n*(2n)!)/(n!(n+1)!)) time | O(n) space
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;
}
```