

Our Solution(s)

Run Code

Your Solutions

Run Code

Solution 1Solution 2Solution 3

```
1 # Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 # O(n^2) time | O(n) space
4 def numberOfBinaryTreeTopologies(n, cache={0: 1}):
5     if n in cache:
6         return cache[n]
7     numberOfTrees = 0
8     for leftTreeSize in range(n):
9         rightTreeSize = n - 1 - leftTreeSize
10        numberOfLeftTrees = numberOfBinaryTreeTopologies(leftTreeSize,
11        numberOfRightTrees = numberOfBinaryTreeTopologies(rightTreeSiz
12        numberOfTrees += numberOfLeftTrees * numberOfRightTrees
13    cache[n] = numberOfTrees
14    return numberOfTrees
15
```

Solution 1Solution 2Solution 3

```
1 def numberOfBinaryTreeTopologies(n):
2     # Write your code here.
3     pass
4
```

Our Tests

Custom Output

Submit Code

```
1 def test():
2     # Test cases
3
4     # Test case 1
5     assert numberOfBinaryTreeTopologies(1) == 1
6     assert numberOfBinaryTreeTopologies(2) == 2
7     assert numberOfBinaryTreeTopologies(3) == 5
8     assert numberOfBinaryTreeTopologies(4) == 14
9     assert numberOfBinaryTreeTopologies(5) == 42
10    assert numberOfBinaryTreeTopologies(6) == 132
11    assert numberOfBinaryTreeTopologies(7) == 429
12    assert numberOfBinaryTreeTopologies(8) == 1430
13    assert numberOfBinaryTreeTopologies(9) == 4862
14    assert numberOfBinaryTreeTopologies(10) == 16796
15
```

```
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2     # Test cases
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4     # Test case 1
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13    assert numberOfBinaryTreeTopologies(9) == 4862
14    assert numberOfBinaryTreeTopologies(10) == 16796
15
```

```
10 # Add a new element to the list
11 list.append('orange')
12
13 # Add a new element to the list
14 list.append('orange')
15
16 # Add a new element to the list
17 list.append('orange')
18
19 # Add a new element to the list
20 list.append('orange')
21
22 # Add a new element to the list
23 list.append('orange')
```

Run or submit code when you're ready.