

Our Solution(s)

Run Code

Your Solutions

Run Code

Solution 1

Solution 2

Solution 3

```
1 // Copyright © 2020 AlgoExpert, LLC. All rights reserved.
2
3 // O(n^2) time | O(n) space
4 function numberOfBinaryTreeTopologies(n, cache = {0: 1}) {
5   if (n in cache) return cache[n];
6   let numberOfTrees = 0;
7   for (let leftTreeSize = 0; leftTreeSize < n; leftTreeSize++) {
8     const rightTreeSize = n - 1 - leftTreeSize;
9     const numberOfLeftTrees = numberOfBinaryTreeTopologies(leftTreeSize);
10    const numberOfRightTrees = numberOfBinaryTreeTopologies(rightTreeSize);
11    numberOfTrees += numberOfLeftTrees * numberOfRightTrees;
12  }
13  cache[n] = numberOfTrees;
14  return numberOfTrees;
15 }
16
17 exports.numberOfBinaryTreeTopologies = numberOfBinaryTreeTopologies;
18
```

Solution 1

Solution 2

Solution 3

```
1 function numberOfBinaryTreeTopologies(n) {
2   // Write your code here.
3 }
4
5 // Do not edit the line below.
6 exports.numberOfBinaryTreeTopologies = numberOfBinaryTreeTopologies;
7
```

Our Tests

Custom Output

Submit Code

```
1 // Test Case 1: numberOfBinaryTreeTopologies(1) = 1
2 // Test Case 2: numberOfBinaryTreeTopologies(2) = 2
3
4 // Test Case 3: numberOfBinaryTreeTopologies(3) = 5
5
6 // Test Case 4: numberOfBinaryTreeTopologies(4) = 14
7
8 // Test Case 5: numberOfBinaryTreeTopologies(5) = 42
9
10 // Test Case 6: numberOfBinaryTreeTopologies(6) = 132
11
12 // Test Case 7: numberOfBinaryTreeTopologies(7) = 429
13
14 // Test Case 8: numberOfBinaryTreeTopologies(8) = 1430
15
16 // Test Case 9: numberOfBinaryTreeTopologies(9) = 4862
17
18 // Test Case 10: numberOfBinaryTreeTopologies(10) = 16796
19
20 // Test Case 11: numberOfBinaryTreeTopologies(11) = 58581
21
22 // Test Case 12: numberOfBinaryTreeTopologies(12) = 208012
23
24 // Test Case 13: numberOfBinaryTreeTopologies(13) = 742900
25
26 // Test Case 14: numberOfBinaryTreeTopologies(14) = 2673135
27
28 // Test Case 15: numberOfBinaryTreeTopologies(15) = 9694600
29
30 // Test Case 16: numberOfBinaryTreeTopologies(16) = 35357670
31
32 // Test Case 17: numberOfBinaryTreeTopologies(17) = 129644790
33
34 // Test Case 18: numberOfBinaryTreeTopologies(18) = 477638700
35
36 // Test Case 19: numberOfBinaryTreeTopologies(19) = 1772973120
37
38 // Test Case 20: numberOfBinaryTreeTopologies(20) = 6578004400
39
40 // Test Case 21: numberOfBinaryTreeTopologies(21) = 24466267200
41
42 // Test Case 22: numberOfBinaryTreeTopologies(22) = 90084548800
43
44 // Test Case 23: numberOfBinaryTreeTopologies(23) = 332977088000
45
46 // Test Case 24: numberOfBinaryTreeTopologies(24) = 1216651360000
47
48 // Test Case 25: numberOfBinaryTreeTopologies(25) = 4456731904000
49
50 // Test Case 26: numberOfBinaryTreeTopologies(26) = 16479436800000
51
52 // Test Case 27: numberOfBinaryTreeTopologies(27) = 60108039040000
53
54 // Test Case 28: numberOfBinaryTreeTopologies(28) = 220476816000000
55
56 // Test Case 29: numberOfBinaryTreeTopologies(29) = 812947840000000
57
58 // Test Case 30: numberOfBinaryTreeTopologies(30) = 2980077824000000
59
60 // Test Case 31: numberOfBinaryTreeTopologies(31) = 10947360000000000
61
62 // Test Case 32: numberOfBinaryTreeTopologies(32) = 40116930000000000
63
64 // Test Case 33: numberOfBinaryTreeTopologies(33) = 148296864000000000
65
66 // Test Case 34: numberOfBinaryTreeTopologies(34) = 548145600000000000
67
68 // Test Case 35: numberOfBinaryTreeTopologies(35) = 2015533000000000000
69
70 // Test Case 36: numberOfBinaryTreeTopologies(36) = 7429004000000000000
71
72 // Test Case 37: numberOfBinaryTreeTopologies(37) = 27207596800000000000
73
74 // Test Case 38: numberOfBinaryTreeTopologies(38) = 100022656000000000000
75
76 // Test Case 39: numberOfBinaryTreeTopologies(39) = 369711488000000000000
77
78 // Test Case 40: numberOfBinaryTreeTopologies(40) = 1374275200000000000000
79
80 // Test Case 41: numberOfBinaryTreeTopologies(41) = 5075145600000000000000
81
82 // Test Case 42: numberOfBinaryTreeTopologies(42) = 18647584000000000000000
83
84 // Test Case 43: numberOfBinaryTreeTopologies(43) = 68647360000000000000000
85
86 // Test Case 44: numberOfBinaryTreeTopologies(44) = 252952960000000000000000
87
88 // Test Case 45: numberOfBinaryTreeTopologies(45) = 924976000000000000000000
89
90 // Test Case 46: numberOfBinaryTreeTopologies(46) = 3394560000000000000000000
91
92 // Test Case 47: numberOfBinaryTreeTopologies(47) = 12441600000000000000000000
93
94 // Test Case 48: numberOfBinaryTreeTopologies(48) = 45945600000000000000000000
95
96 // Test Case 49: numberOfBinaryTreeTopologies(49) = 169224000000000000000000000
97
98 // Test Case 50: numberOfBinaryTreeTopologies(50) = 618800000000000000000000000
99
100 // Test Case 51: numberOfBinaryTreeTopologies(51) = 2278080000000000000000000000
101
102 // Test Case 52: numberOfBinaryTreeTopologies(52) = 8361600000000000000000000000
103
104 // Test Case 53: numberOfBinaryTreeTopologies(53) = 30545600000000000000000000000
105
106 // Test Case 54: numberOfBinaryTreeTopologies(54) = 111776000000000000000000000000
107
108 // Test Case 55: numberOfBinaryTreeTopologies(55) = 407776000000000000000000000000
109
110 // Test Case 56: numberOfBinaryTreeTopologies(56) = 1497600000000000000000000000000
111
112 // Test Case 57: numberOfBinaryTreeTopologies(57) = 5497600000000000000000000000000
113
114 // Test Case 58: numberOfBinaryTreeTopologies(58) = 20176000000000000000000000000000
115
116 // Test Case 59: numberOfBinaryTreeTopologies(59) = 74290000000000000000000000000000
117
118 // Test Case 60: numberOfBinaryTreeTopologies(60) = 272075000000000000000000000000000
119
120 // Test Case 61: numberOfBinaryTreeTopologies(61) = 1000225000000000000000000000000000
121
122 // Test Case 62: numberOfBinaryTreeTopologies(62) = 3697110000000000000000000000000000
123
124 // Test Case 63: numberOfBinaryTreeTopologies(63) = 13742700000000000000000000000000000
125
126 // Test Case 64: numberOfBinaryTreeTopologies(64) = 50751300000000000000000000000000000
127
128 // Test Case 65: numberOfBinaryTreeTopologies(65) = 186475000000000000000000000000000000
129
130 // Test Case 66: numberOfBinaryTreeTopologies(66) = 686472000000000000000000000000000000
131
132 // Test Case 67: numberOfBinaryTreeTopologies(67) = 2529510000000000000000000000000000000
133
134 // Test Case 68: numberOfBinaryTreeTopologies(68) = 9249600000000000000000000000000000000
135
136 // Test Case 69: numberOfBinaryTreeTopologies(69) = 33944000000000000000000000000000000000
137
138 // Test Case 70: numberOfBinaryTreeTopologies(70) = 124400000000000000000000000000000000000
139
140 // Test Case 71: numberOfBinaryTreeTopologies(71) = 459440000000000000000000000000000000000
141
142 // Test Case 72: numberOfBinaryTreeTopologies(72) = 1692100000000000000000000000000000000000
143
144 // Test Case 73: numberOfBinaryTreeTopologies(73) = 6187000000000000000000000000000000000000
145
146 // Test Case 74: numberOfBinaryTreeTopologies(74) = 22770000000000000000000000000000000000000
147
148 // Test Case 75: numberOfBinaryTreeTopologies(75) = 83600000000000000000000000000000000000000
149
150 // Test Case 76: numberOfBinaryTreeTopologies(76) = 305300000000000000000000000000000000000000
151
152 // Test Case 77: numberOfBinaryTreeTopologies(77) = 1116000000000000000000000000000000000000000
153
154 // Test Case 78: numberOfBinaryTreeTopologies(78) = 4075000000000000000000000000000000000000000
155
156 // Test Case 79: numberOfBinaryTreeTopologies(79) = 14960000000000000000000000000000000000000000
157
158 // Test Case 80: numberOfBinaryTreeTopologies(80) = 549500000000000000000000000000000000000000000
159
160 // Test Case 81: numberOfBinaryTreeTopologies(81) = 2015000000000000000000000000000000000000000000
161
162 // Test Case 82: numberOfBinaryTreeTopologies(82) = 7428000000000000000000000000000000000000000000
163
164 // Test Case 83: numberOfBinaryTreeTopologies(83) = 27200000000000000000000000000000000000000000000
165
166 // Test Case 84: numberOfBinaryTreeTopologies(84) = 100000000000000000000000000000000000000000000000
167
168 // Test Case 85: numberOfBinaryTreeTopologies(85) = 369600000000000000000000000000000000000000000000
169
170 // Test Case 86: numberOfBinaryTreeTopologies(86) = 1373000000000000000000000000000000000000000000000
171
172 // Test Case 87: numberOfBinaryTreeTopologies(87) = 5074000000000000000000000000000000000000000000000
173
174 // Test Case 88: numberOfBinaryTreeTopologies(88) = 18630000000000000000000000000000000000000000000000
175
176 // Test Case 89: numberOfBinaryTreeTopologies(89) = 68630000000000000000000000000000000000000000000000
177
178 // Test Case 90: numberOfBinaryTreeTopologies(90) = 252800000000000000000000000000000000000000000000000
179
180 // Test Case 91: numberOfBinaryTreeTopologies(91) = 924800000000000000000000000000000000000000000000000
181
182 // Test Case 92: numberOfBinaryTreeTopologies(92) = 3393000000000000000000000000000000000000000000000000
183
184 // Test Case 93: numberOfBinaryTreeTopologies(93) = 12430000000000000000000000000000000000000000000000000
185
186 // Test Case 94: numberOfBinaryTreeTopologies(94) = 45930000000000000000000000000000000000000000000000000
187
188 // Test Case 95: numberOfBinaryTreeTopologies(95) = 169100000000000000000000000000000000000000000000000000
189
190 // Test Case 96: numberOfBinaryTreeTopologies(96) = 6170000000000000000000000000000000000000000000000000000
191
192 // Test Case 97: numberOfBinaryTreeTopologies(97) = 22750000000000000000000000000000000000000000000000000000
193
194 // Test Case 98: numberOfBinaryTreeTopologies(98) = 835000000000000000000000000000000000000000000000000000000
195
196 // Test Case 99: numberOfBinaryTreeTopologies(99) = 3050000000000000000000000000000000000000000000000000000000
197
198 // Test Case 100: numberOfBinaryTreeTopologies(100) = 11100000000000000000000000000000000000000000000000000000000
199
200 // Test Case 101: numberOfBinaryTreeTopologies(101) = 407000000000000000000000000000000000000000000000000000000000
201
202 // Test Case 102: numberOfBinaryTreeTopologies(102) = 1490000000000000000000000000000000000000000000000000000000000
203
204 // Test Case 103: numberOfBinaryTreeTopologies(103) = 5480000000000000000000000000000000000000000000000000000000000
205
206 // Test Case 104: numberOfBinaryTreeTopologies(104) = 20100000000000000000000000000000000000000000000000000000000000
207
208 // Test Case 105: numberOfBinaryTreeTopologies(105) = 74100000000000000000000000000000000000000000000000000000000000
209
209
```

Custom Output

Submit Code

```
100 Test Case 001 - Passing (1/1)
101 Test Case Progress Submit Review Test Case Log Go Back Next
102
103
104 Test Case 001 - Passing (1/1)
105 Test Case Progress Submit Review Test Case Log Go Back Next
106
107
108 Test Case 001 - Passing (1/1)
109 Test Case Progress Submit Review Test Case Log Go Back Next
110
111
112 Test Case 001 - Passing (1/1)
113 Test Case Progress Submit Review Test Case Log Go Back Next
114
```

Run or submit code when you're ready.