

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) {
5   const cache = [1];
6   for (let m = 1; m < n + 1; m++) {
7     let numberOfTrees = 0;
8     for (let leftTreeSize = 0; leftTreeSize < m; leftTreeSize++) {
9       const rightTreeSize = m - 1 - leftTreeSize;
10      const numberOfLeftTrees = cache[leftTreeSize];
11      const numberOfRightTrees = cache[rightTreeSize];
12      numberOfTrees += numberOfLeftTrees * numberOfRightTrees;
13    }
14    cache.push(numberOfTrees);
15  }
16  return cache[n];
17 }
18
19 exports.numberOfBinaryTreeTopologies = numberOfBinaryTreeTopologies;
20
```

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) = 58584
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) = 6581354720
39
40 // Test Case 21: numberOfBinaryTreeTopologies(21) = 24466267200
41
42 // Test Case 22: numberOfBinaryTreeTopologies(22) = 90084544000
43
44 // Test Case 23: numberOfBinaryTreeTopologies(23) = 332977680000
45
46 // Test Case 24: numberOfBinaryTreeTopologies(24) = 1216651360000
47
48 // Test Case 25: numberOfBinaryTreeTopologies(25) = 4456099200000
49
50 // Test Case 26: numberOfBinaryTreeTopologies(26) = 16479436800000
51
52 // Test Case 27: numberOfBinaryTreeTopologies(27) = 60121550400000
53
54 // Test Case 28: numberOfBinaryTreeTopologies(28) = 220476883200000
55
56 // Test Case 29: numberOfBinaryTreeTopologies(29) = 812941440000000
57
58 // Test Case 30: numberOfBinaryTreeTopologies(30) = 2980832256000000
59
60 // Test Case 31: numberOfBinaryTreeTopologies(31) = 10944057600000000
61
62 // Test Case 32: numberOfBinaryTreeTopologies(32) = 40116930560000000
63
64 // Test Case 33: numberOfBinaryTreeTopologies(33) = 148296832000000000
65
66 // Test Case 34: numberOfBinaryTreeTopologies(34) = 542745600000000000
67
68 // Test Case 35: numberOfBinaryTreeTopologies(35) = 1990564608000000000
69
70 // Test Case 36: numberOfBinaryTreeTopologies(36) = 7294857600000000000
71
72 // Test Case 37: numberOfBinaryTreeTopologies(37) = 26915363200000000000
73
74 // Test Case 38: numberOfBinaryTreeTopologies(38) = 98640960000000000000
75
76 // Test Case 39: numberOfBinaryTreeTopologies(39) = 360528128000000000000
77
78 // Test Case 40: numberOfBinaryTreeTopologies(40) = 1334961664000000000000
79
80 // Test Case 41: numberOfBinaryTreeTopologies(41) = 4935283200000000000000
81
82 // Test Case 42: numberOfBinaryTreeTopologies(42) = 18150336000000000000000
83
84 // Test Case 43: numberOfBinaryTreeTopologies(43) = 66609920000000000000000
85
86 // Test Case 44: numberOfBinaryTreeTopologies(44) = 244662672000000000000000
87
88 // Test Case 45: numberOfBinaryTreeTopologies(45) = 894163200000000000000000
89
90 // Test Case 46: numberOfBinaryTreeTopologies(46) = 3262656000000000000000000
91
92 // Test Case 47: numberOfBinaryTreeTopologies(47) = 11957760000000000000000000
93
94 // Test Case 48: numberOfBinaryTreeTopologies(48) = 43747200000000000000000000
95
96 // Test Case 49: numberOfBinaryTreeTopologies(49) = 160944000000000000000000000
97
98 // Test Case 50: numberOfBinaryTreeTopologies(50) = 591360000000000000000000000
99
100 // Test Case 51: numberOfBinaryTreeTopologies(51) = 2164512000000000000000000000
101
102 // Test Case 52: numberOfBinaryTreeTopologies(52) = 7948320000000000000000000000
103
104 // Test Case 53: numberOfBinaryTreeTopologies(53) = 29018880000000000000000000000
105
106 // Test Case 54: numberOfBinaryTreeTopologies(54) = 106492800000000000000000000000
107
108 // Test Case 55: numberOfBinaryTreeTopologies(55) = 390700800000000000000000000000
109
110 // Test Case 56: numberOfBinaryTreeTopologies(56) = 1430832000000000000000000000000
111
112 // Test Case 57: numberOfBinaryTreeTopologies(57) = 5233280000000000000000000000000
113
114 // Test Case 58: numberOfBinaryTreeTopologies(58) = 19224000000000000000000000000000
115
116 // Test Case 59: numberOfBinaryTreeTopologies(59) = 70336000000000000000000000000000
117
118 // Test Case 60: numberOfBinaryTreeTopologies(60) = 258272000000000000000000000000000
119
120 // Test Case 61: numberOfBinaryTreeTopologies(61) = 951040000000000000000000000000000
121
122 // Test Case 62: numberOfBinaryTreeTopologies(62) = 3500800000000000000000000000000000
123
124 // Test Case 63: numberOfBinaryTreeTopologies(63) = 12806400000000000000000000000000000
125
126 // Test Case 64: numberOfBinaryTreeTopologies(64) = 47155200000000000000000000000000000
127
128 // Test Case 65: numberOfBinaryTreeTopologies(65) = 174432000000000000000000000000000000
129
130 // Test Case 66: numberOfBinaryTreeTopologies(66) = 644160000000000000000000000000000000
131
132 // Test Case 67: numberOfBinaryTreeTopologies(67) = 2376960000000000000000000000000000000
133
134 // Test Case 68: numberOfBinaryTreeTopologies(68) = 8803200000000000000000000000000000000
135
136 // Test Case 69: numberOfBinaryTreeTopologies(69) = 32332800000000000000000000000000000000
137
138 // Test Case 70: numberOfBinaryTreeTopologies(70) = 119040000000000000000000000000000000000
139
140 // Test Case 71: numberOfBinaryTreeTopologies(71) = 437472000000000000000000000000000000000
141
142 // Test Case 72: numberOfBinaryTreeTopologies(72) = 1609440000000000000000000000000000000000
143
144 // Test Case 73: numberOfBinaryTreeTopologies(73) = 5913600000000000000000000000000000000000
145
146 // Test Case 74: numberOfBinaryTreeTopologies(74) = 21645120000000000000000000000000000000000
147
148 // Test Case 75: numberOfBinaryTreeTopologies(75) = 79483200000000000000000000000000000000000
149
150 // Test Case 76: numberOfBinaryTreeTopologies(76) = 290188800000000000000000000000000000000000
151
152 // Test Case 77: numberOfBinaryTreeTopologies(77) = 1064928000000000000000000000000000000000000
153
154 // Test Case 78: numberOfBinaryTreeTopologies(78) = 3907008000000000000000000000000000000000000
155
156 // Test Case 79: numberOfBinaryTreeTopologies(79) = 14308320000000000000000000000000000000000000
157
158 // Test Case 80: numberOfBinaryTreeTopologies(80) = 52332800000000000000000000000000000000000000
159
160 // Test Case 81: numberOfBinaryTreeTopologies(81) = 192240000000000000000000000000000000000000000
161
162 // Test Case 82: numberOfBinaryTreeTopologies(82) = 703360000000000000000000000000000000000000000
163
164 // Test Case 83: numberOfBinaryTreeTopologies(83) = 2582720000000000000000000000000000000000000000
165
166 // Test Case 84: numberOfBinaryTreeTopologies(84) = 9510400000000000000000000000000000000000000000
167
168 // Test Case 85: numberOfBinaryTreeTopologies(85) = 35008000000000000000000000000000000000000000000
169
170 // Test Case 86: numberOfBinaryTreeTopologies(86) = 128064000000000000000000000000000000000000000000
171
172 // Test Case 87: numberOfBinaryTreeTopologies(87) = 471552000000000000000000000000000000000000000000
173
174 // Test Case 88: numberOfBinaryTreeTopologies(88) = 1744320000000000000000000000000000000000000000000
175
176 // Test Case 89: numberOfBinaryTreeTopologies(89) = 6441600000000000000000000000000000000000000000000
177
178 // Test Case 90: numberOfBinaryTreeTopologies(90) = 23769600000000000000000000000000000000000000000000
179
180 // Test Case 91: numberOfBinaryTreeTopologies(91) = 880320000000000000000000000000000000000000000000000
181
182 // Test Case 92: numberOfBinaryTreeTopologies(92) = 3233280000000000000000000000000000000000000000000000
183
184 // Test Case 93: numberOfBinaryTreeTopologies(93) = 11904000000000000000000000000000000000000000000000000
185
186 // Test Case 94: numberOfBinaryTreeTopologies(94) = 43747200000000000000000000000000000000000000000000000
187
188 // Test Case 95: numberOfBinaryTreeTopologies(95) = 160944000000000000000000000000000000000000000000000000
189
190 // Test Case 96: numberOfBinaryTreeTopologies(96) = 591360000000000000000000000000000000000000000000000000
191
192 // Test Case 97: numberOfBinaryTreeTopologies(97) = 2164512000000000000000000000000000000000000000000000000
193
194 // Test Case 98: numberOfBinaryTreeTopologies(98) = 7948320000000000000000000000000000000000000000000000000
195
196 // Test Case 99: numberOfBinaryTreeTopologies(99) = 29018880000000000000000000000000000000000000000000000000
197
198 // Test Case 100: numberOfBinaryTreeTopologies(100) = 106492800000000000000000000000000000000000000000000000000
199
200 // Test Case 101: numberOfBinaryTreeTopologies(101) = 390700800000000000000000000000000000000000000000000000000
201
202 // Test Case 102: numberOfBinaryTreeTopologies(102) = 1430832000000000000000000000000000000000000000000000000000
203
204 // Test Case 103: numberOfBinaryTreeTopologies(103) = 5233280000000000000000000000000000000000000000000000000000
205
206 // Test Case 104: numberOfBinaryTreeTopologies(104) = 19224000000000000000000000000000000000000000000000000000000
207
208 // Test Case 105: numberOfBinaryTreeTopologies(105) = 70336000000000000000000000000000000000000000000000000000000
209
210 // Test Case 106: numberOfBinaryTreeTopologies(106) = 258272000000000000000000000000000000000000000000000000000000
211
212 // Test Case 107: numberOfBinaryTreeTopologies(107) = 951040000000000000000000000000000000000000000000000000000000
213
214 // Test Case 108: numberOfBinaryTreeTopologies(108) = 3500800000000000000000000000000000000000000000000000000000000
215
216 // Test Case 109: numberOfBinaryTreeTopologies(109) = 12806400000000000000000000000000000000000000000000000000000000
217
218 // Test Case 110: numberOfBinaryTreeTopologies(110) = 47155200000000000000000000000000000000000000000000000000000000
219
220 // Test Case 111: numberOfBinaryTreeTopologies(111) = 174432000000000000000000000000000000000000000000000000000000000
221
222 // Test Case 112: numberOfBinaryTreeTopologies(112) = 6441600000000000000000000000000000000000000000000000000000000000
223
224 // Test Case 113: numberOfBinaryTreeTopologies(113) = 23769600000000000000000000000000000000000000000000000000000000000
225
226 // Test Case 114: numberOfBinaryTreeTopologies(114) = 88032000000000000000000000000000000000000000000000000000000000000
227
228 // Test Case 115: numberOfBinaryTreeTopologies(115) = 323328000000000000000000000000000000000000000000000000000000000000
229
230 // Test Case 116: numberOfBinaryTreeTopologies(116) = 1190400000000000000000000000000000000000000000000000000000000000000
231
232 // Test Case 117: numberOfBinaryTreeTopologies(117) = 43747200000000000000000000000000000000000000000000000000000000000000
233
234 // Test Case 118: numberOfBinaryTreeTopologies(118) = 160944000000000000000000000000000000000000000000000000000000000000000
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236 // Test Case 119: numberOfBinaryTreeTopologies(119) = 591360000000000000000000000000000000000000000000000000000000000000000
237
238 // Test Case 120: numberOfBinaryTreeTopologies(120) = 2164512000000000000000000000000000000000000000000000000000000000000000
239
240 // Test Case 121: numberOfBinaryTreeTopologies(121) = 7948320000000000000000000000000000000000000000000000000000000000000000
241
242 // Test Case 122: numberOfBinaryTreeTopologies(122) = 29018880000000000000000000000000000000000000000000000000000000000000000
243
244 // Test Case 123: numberOfBinaryTreeTopologies(123) = 106492800000000000000000000000000000000000000000000000000000000000000000
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246 // Test Case 124: numberOfBinaryTreeTopologies(124) = 390700800000000000000000000000000000000000000000000000000000000000000000
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248 // Test Case 125: numberOfBinaryTreeTopologies(125) = 1430832000000000000000000000000000000000000000000000000000000000000000000
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250 // Test Case 126: numberOfBinaryTreeTopologies(126) = 5233280000000000000000000000000000000000000000000000000000000000000000000
251
252 // Test Case 127: numberOfBinaryTreeTopologies(127) = 19224000000000000000000000000000000000000000000000000000000000000000000000
253
254 // Test Case 128: numberOfBinaryTreeTopologies(128) = 70336000000000000000000000000000000000000000000000000000000000000000000000
255
256 // Test Case 129: numberOfBinaryTreeTopologies(129) = 258272000000000000000000000000000000000000000000000000000000000000000000000
257
258 // Test Case 130: numberOfBinaryTreeTopologies(130) = 951040000000000000000000000000000000000000000000000000000000000000000000000
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260 // Test Case 131: numberOfBinaryTreeTopologies(131) = 3500800000000000000000000000000000000000000000000000000000000000000000000000
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262 // Test Case 132: numberOfBinaryTreeTopologies(132) = 12806400000000000000000000000000000000000000000000000000000000000000000000000
263
264 // Test Case 133: numberOfBinaryTreeTopologies(133) = 47155200000000000000000000000000000000000000000000000000000000000000000000000
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266 // Test Case 134: numberOfBinaryTreeTopologies(134) = 174432000000000000000000000000000000000000000000000000000000000000000000000000
267
268 // Test Case 135: numberOfBinaryTreeTopologies(135) = 644160000000000000000000000000000000000000000000000000000000000000000000000000
269
270 // Test Case 136: numberOfBinaryTreeTopologies(136) = 2376960000000000000000000000000000000000000000000000000000000000000000000000000
271
272 // Test Case 137: numberOfBinaryTreeTopologies(137) = 8803200000000000000000000000000000000000000000000000000000000000000000000000000
273
274 // Test Case 138: numberOfBinaryTreeTopologies(138) = 32332800000000000000000000000000000000000000000000000000000000000000000000000000
275
276 // Test Case 139: numberOfBinaryTreeTopologies(139) = 11904000000000000000000000000000000000000000000000000000000000000000000000000000
277
278 // Test Case 140: numberOfBinaryTreeTopologies(140) = 437472000000000000000000000000000000000000000000000000000000000000000000000000000
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280 // Test Case 141: numberOfBinaryTreeTopologies(141) = 1609440000000000000000000000000000000000000000000000000000000000000000000000000000
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282 // Test Case 142: numberOfBinaryTreeTopologies(142) = 5913600000000000000000000000000000000000000000000000000000000000000000000000000000
283
284 // Test Case 143: numberOfBinaryTreeTopologies(143) = 21645120000000000000000000000000000000000000000000000000000000000000000000000000000
285
286 // Test Case 144: numberOfBinaryTreeTopologies(144) = 79483200000000000000000000000000000000000000000000000000000000000000000000000000000
287
288 // Test Case 145: numberOfBinaryTreeTopologies(145) = 290188800000000000000000000000000000000000000000000000000000000000000000000000000000
289
290 // Test Case 146: numberOfBinaryTreeTopologies(146) = 1064928000000000000000000000000000000000000000000000000000000000000000000000000000000
291
292 // Test Case 147: numberOfBinaryTreeTopologies(147) = 3907008000000000000000000000000000000000000000000000000000000000000000000000000000000
293
294 // Test Case 148: numberOfBinaryTreeTopologies(148) = 14308320000000000000000000000000000000000000000000000000000000000000000000000000000000
295
296 // Test Case 149: numberOfBinaryTreeTopologies(149) = 52332800000000000000000000000000000000000000000000000000000000000000000000000000000000
297
298 // Test Case 150: numberOfBinaryTreeTopologies(150) = 192240000000000000000000000000000000000000000000000000000000000000000000000000000000000
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300 // Test Case 151: numberOfBinaryTreeTopologies(151) = 703360000000000000000000000000000000000000000000000000000000000000000000000000000000000
301
302 // Test Case 152: numberOfBinaryTreeTopologies(152) = 2582720000000000000000000000000000000000000000000000000000000000000000000000000000000000
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304 // Test Case 153: numberOfBinaryTreeTopologies(153) = 9510400000000000000000000000000000000000000000000000000000000000000000000000000000000000
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306 // Test Case 154: numberOfBinaryTreeTopologies(154) = 35008000000000000000000000000000000000000000000000000000000000000000000000000000000000000
307
308 // Test Case 155: numberOfBinaryTreeTopologies(155) = 128064000000000000000000000000000000000000000000000000000000000000000000000000000000000000
309
310 // Test Case 156: numberOfBinaryTreeTopologies(156) = 471552000000000000000000000000000000000000000000000000000000000000000000000000000000000000
311
312 // Test Case 157: numberOfBinaryTreeTopologies(157) = 1744320000000000000000000000000000000000000000000000000000000000000000000000000000000000000
313
314 // Test Case 158: numberOfBinaryTreeTopologies(158) = 6441600000000000000000000000000000000000000000000000000000000000000000000000000000000000000
315
316 // Test Case 159: numberOfBinaryTreeTopologies(159) = 2376960000000000000000000000000000000000000000000000000000000000000000000000000000000000000
317
318 // Test Case 160: numberOfBinaryTreeTopologies(160) = 8803200000000000000000000000000000000000000000000000000000000000000000000000000000000000000
319
320 // Test Case 161: numberOfBinaryTreeTopologies(161) = 32332800000000000000000000000000000000000000000000000000000000000000000000000000000000000000
321
322 // Test Case 162: numberOfBinaryTreeTopologies(162) = 11904000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
323
324 // Test Case 163: numberOfBinaryTreeTopologies(163) = 437472000000
```

```
100 Test Case 001 - Passing (1/1)
101 Test Case 001 - Passing (1/1)
102 Test Case 001 - Passing (1/1)
103 Test Case 001 - Passing (1/1)
104 Test Case 001 - Passing (1/1)
105 Test Case 001 - Passing (1/1)
106 Test Case 001 - Passing (1/1)
107 Test Case 001 - Passing (1/1)
108 Test Case 001 - Passing (1/1)
109 Test Case 001 - Passing (1/1)
110 Test Case 001 - Passing (1/1)
```

Run or submit code when you're ready.