1259. Handshakes That Don't Cross Premium

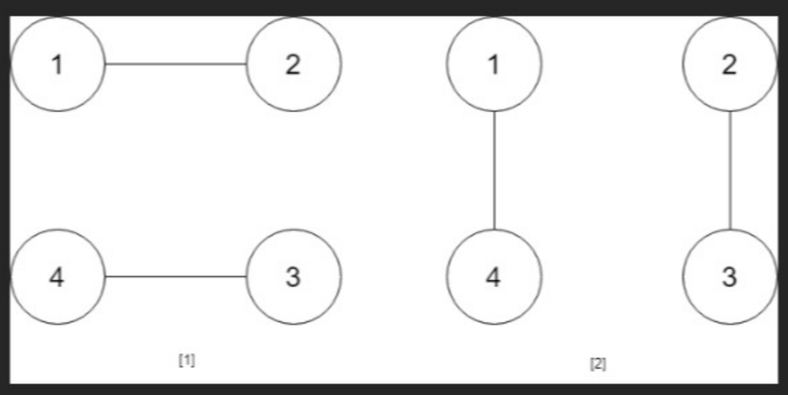
Hard | Topics | Companies | Hint

You are given an **even** number of people `numPeople` that stand around a circle and each person shakes hands with someone else so that there are `numPeople / 2` handshakes total.

Return *the number of ways these handshakes could occur such that none of the handshakes cross.*

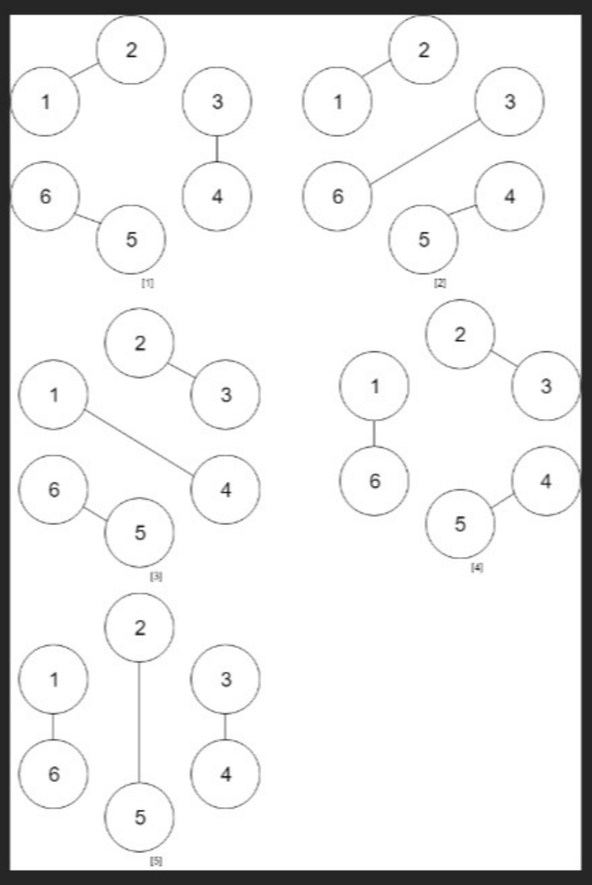
Since the answer could be very large, return it **modulo** $10^9 + 7$.

Example 1:




```
Input: numPeople = 4
Output: 2
Explanation: There are two ways to do it, the first way is [(1,2),(3,4)] and the second one is [(2,3),(4,1)].
```

Example 2:




```
Input: numPeople = 6
Output: 5
```

Constraints:

- `2 <= numPeople <= 1000`
- `numPeople` is even.

Seen this question in a real interview before? 1/5

Yes No

Accepted 12.2K | Submissions 20.4K | Acceptance Rate 59.7%

Topics

Math Dynamic Programming

Companies

0 - 6 months

Amazon 2

Hint 1

Use dynamic programming.

Hint 2

Let dp[n] be the number of ways that n people can handshake.

Hint 3

Then fix a person as a pivot and turn for every other person who will have a handshake, the answer is the sum of the products of the new two subproblems.

Discussion (7)