

1359. Count All Valid Pickup and Delivery Options

Description

Given n orders, each order consists of a pickup and a delivery service.

Count all valid pickup/delivery possible sequences such that $\text{delivery}(i)$ is always after of $\text{pickup}(i)$.

Since the answer may be too large, return it modulo $10^9 + 7$.

Example 1:

Input: $n = 1$

Output: 1

Explanation: Unique order (P1, D1), Delivery 1 always is after of Pickup 1.

Example 2:

Input: $n = 2$

Output: 6

Explanation: All possible orders:

(P1,P2,D1,D2), (P1,P2,D2,D1), (P1,D1,P2,D2), (P2,P1,D1,D2), (P2,P1,D2,D1) and (P2,D2,P1,D1).

This is an invalid order (P1,D2,P2,D1) because Pickup 2 is after of Delivery 2.

Example 3:

Input: $n = 3$

Output: 90

Constraints:

- $1 \leq n \leq 500$

