Problem M. Dividing Chains

For a sequence $z_1, z_2, \cdots, z_n$, consider a set $S = \{1, n+1\}$. Little Cyan Fish may perform the following operations **exactly** $n-1$ times:

- Choose an integer x s.t. $x \notin S$ and $1 < x \leq n$.
- Let l be the **predecessor** of x in S, i.e., the largest integer in S such that $l < x$.
- Let r be the **successor** of x in S, i.e., the smallest integer in S such that $x < r$.
- Do nothing **or** apply the following update to the sequence z
  - Reverse the subsegment $z_l, z_{l+1}, \ldots, z_{r-1}$, i.e., z_i becomes $z_{r-1-(i-l)}$ for all $l \leq i \leq r-1$.
- Update $S \leftarrow S \cup \{x\}$.

Obviously, in the end, S will become $\{1, 2, \ldots, n, n+1\}$. For a given **monotonically non-decreasing** sequence $a_1, a_2, \ldots, a_n$, you need to count the number of sequences $z_1, z_2, \ldots, z_n$, modulo $998\,244\,353$, that satisfy the following condition:

- There exists a way to apply the operations above to convert the sequence $z_1, z_2, \cdots, z_n$ to $a_1, a_2, \cdots, a_n$.

This problem sounds non-sensical to Little Cyan Fish. Therefore, he asked you to solve this problem.

Input

The first line of the input contains a single integer n ($1 \leq n \leq 500$).

The next line of the input contains n integers $a_1, a_2, \ldots, a_n$ ($1 \leq a_1 \leq a_2 \leq \ldots \leq a_n \leq n$).

Output

Output a single line containing a single integer, indicating the answer modulo $998\,244\,353$.

Examples

standard input	standard output
3 2 3 3	3
5 1 1 3 3 5	29
9 1 2 3 5 5 6 7 8 9	26276