# Topological Sort

| | |
|---|---|
| Input file: | `standard input` |
| Output file: | `standard output` |
| Time limit: | 2 seconds |
| Memory limit: | 1024 megabytes |

You are given a positive integer $N$ and a permutation $P = (P_1, P_2, \ldots, P_N)$ of $(1, 2, \ldots, N)$.

Find the number of directed graphs with $N$ vertices labeled with $1, 2, \ldots, N$ and unlabeled edges, satisfying the following conditions:

- The graph is a simple DAG. That is, it does not contain directed cycles nor multiple edges.

- The lexicographically smallest topological ordering of the vertices is $P$.

Output the answer modulo 998244353.

## Input

The input is given from Standard Input in the following format:

```
N
P_1 P_2 ... P_N
```

- $2 \le N \le 2 \times 10^5$

- $(P_1, P_2, \ldots, P_N)$ is a permutation of $(1, 2, \ldots, N)$.

- All input values are integers.

## Output

Print the answer in a single line.

## Examples

| standard input | standard output |
|---|---|
| 3<br>1 3 2 | 4 |
| 5<br>1 2 3 4 5 | 1024 |
| 6<br>4 2 1 5 6 3 | 4096 |

## Note

In the first example, the following four directed graphs satisfy the conditions.