

Problem A. Swap

Input file: *standard input*
Output file: *standard output*
Time limit: 2 seconds
Memory limit: 256 mebibytes

In this problem, we are interested in undirected graphs with n vertices labeled by integers from 1 to n , without loops and parallel edges.

For a given graph G , the following procedure can be executed.

```
function dfs(u) {
    set u to active
    for v in 1, 2, ..., n
        if (u and v are adjacent in G) and (v is inactive) {
            swap P[u] and P[v]
            dfs(v)
        }
    set u to done
}

for u in 1, 2, ..., n {
    set u to inactive
    set P[u] to u
}
for u in 1, 2, ..., n
    if u is inactive:
        dfs(u)
```

Given a_1, a_2, \dots, a_n , find the number of different graphs G such that after the procedure, $P[1] = a_1$, $P[2] = a_2, \dots$, and $P[n] = a_n$. Two graphs are different if there is a pair of vertices (u, v) such that one of them contains such edge and the other one does not. As the number of such graphs may be very large, find it modulo 998 244 353.

Input

The first line contains an integer n ($1 \leq n \leq 500$).

The second line contains n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq n$). It is guaranteed that each number from 1 to n occurs in the sequence exactly once.

Output

Print one integer: the number of different graphs G satisfying the conditions, modulo 998 244 353.

Examples

standard input	standard output
3 2 3 1	2
9 7 2 9 1 3 8 6 5 4	3528