Problem L: Linear Time Inversion Number

- Time Limit: 2 sec

Problem Statement

Given a permutation P of length N, Alice uses the inversion number as a measure of how close P is to the permutation $(1, 2, \ldots, N)$, while Bob uses the metric $\frac{1}{2} \sum_{i=1}^{N} |P_i - i|$.

Here, the inversion number is the number of pairs (i, j) such that $i < j$ and $P_i > P_j$.

Given a sequence $A = (A_1, A_2, \ldots, A_K)$ of length K, there are $(N - K)!$ permutations of length N that have A as their prefix.

Find the number of these permutations for which Alice's metric and Bob's metric are equal, and return the result modulo **998,244,353**.

Input

The input is given in the following format:

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N  K
A₁ A₂ ... A_K
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$$N \ K$$
$$A_1 \ A_2 \ \ldots \ A_K$$

- $1 \le N \le 200{,}000$
- $0 \le K \le N$
- $1 \le A_i \le N \quad (1 \le i \le K)$
- $A_i \ne A_j \quad (i \ne j)$
- All input values are integers.

Output

Output the answer.

Sample Input 1	Sample Output 1
5 3 2 3 5	1

Sample Input 2	Sample Output 2
10 10 3 1 4 5 9 2 6 8 7 10	0

Sample Input 3	Sample Output 3
6 0	132