Problem I
It's Time To D-D-D-D-Duel!

The names of the characters have been redacted due to copyright concerns.

Ka•ba S•to, CEO of *Ka•baCorp* and Japan's number one Duelist is once again preparing to defeat his arch-rival, *M•to Y•gi*. Having tasted defeats after defeats mostly thanks to Y•gi's massive plot armor, Ka•ba finally decided to drop his noble façade and try underhanded tactics himself.

He demanded that both players duel using the newly developed *Duel Disk++*, which allows for automatic deck shuffling. However, as the inventor of *Duel Disk++*, Ka•ba knows exactly how the shuffling mechanisms work. Assuming the player's deck contains n cards. After one shuffle, the device will move the card currently at the i-th position to the p_i-th position (positions are numbered from 1 to n from the top of the deck), where p is a permutation of integers from 1 to n that is unique to the device. From prior experience, Ka•ba knows that Y•gi always sets up his deck in a particular order, and that Y•gi will always shuffle the deck using the device exactly k times at the start of the duel. In order to win, Ka•ba needs the i-th card in Y•gi's initial setup to end up at the a_i-th position after k shuffles. To ensure that, Ka•ba will secretly change the permutation p of Y•gi's *Duel Disk++* before the duel.

Given n integers $a_1, a_2, \ldots, a_n$ and the number of shuffles k, help Ka•ba find the number of permutations p that achieves the task.

Input

The first line contains two integers n and k ($1 \le n \le 10^5$, $1 \le k < 10^{100}$) — the number of cards in Y•gi's deck and the number of times Y•gi will shuffle his starting deck, respectively.

The second line contains n distinct integers a_1, a_2, $\ldots$, a_n $(1 \le a_i \le n)$ – the desired configuration of Y•gi's deck.

Output

Output a single integer – the number of permutations p that Ka•ba can choose to fulfill his objective, modulo $998\,244\,353$.

Sample Explanation

In the first sample, Ka•ba can choose p to be either $[4, 1, 5, 2, 3]$ or $[4, 1, 3, 2, 5]$.

In the second and third samples, it can be proven that no matter the choice of p, the deck will always return to its original state after 120 shuffles. Therefore, there are $6! = 720$ permutations that achieve the desired deck configuration in sample 2, and 0 such permutation in sample 3.

Sample Input 1	Sample Output 1
`5 2` `2 4 3 1 5`	`2`

Sample Input 2	Sample Output 2
`6 120` `1 2 3 4 5 6`	`720`

Sample Input 3	Sample Output 3
`6 120` `1 2 3 4 6 5`	`0`

Sample Input 4	Sample Output 4
`10 15` `4 8 5 1 3 10 9 2 7 6`	`465`