Problem J. Permutation

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

You are given a permutation $p_1, p_2, \ldots, p_n$. You can do the following operations repeatedly:

- Choose an interval $p_l, p_{l+1}, \ldots, p_{l+c} (l \geq 1, l+c \leq n)$ where p_l is the smallest element in this interval, you can permutate $p_{l+1}, \ldots, p_{l+c}$ in arbitrary way.
- Choose an interval $p_l, p_{l+1}, \ldots, p_{l+c} (l \geq 1, l+c \leq n)$ where p_{l+c} is the smallest element in this interval, you can permutate $p_l, \ldots, p_{l+c-1}$ in arbitrary way.

You want to know how many distinct permutations you can get using operations. The answer can be large, output the answer modulo 998244353.

Input

The first line contains an integer T denoting the number of test cases ($1 \leq T \leq 100000$).

The first line in a test case contains two integers n and c ($2 \leq c \leq 500000$, $2 \leq n \leq 500000$). The sum of n over all test cases does not exceed 500000.

The second line in a test case contains a permutation $p_1, \ldots, p_n$ ($1 \leq p_i \leq n$).

Output

For each test case, output one line containing the answer modulo 998244353.

Example

standard input	standard output
5 5 3 3 4 2 1 5 5 4 4 2 1 3 5 5 2 4 5 3 1 2 5 3 4 3 2 1 5 5 2 2 3 1 5 4	6 1 4 6 4