In Search of the Ultimate Artifact

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	1024 megabytes

Justin, a skilled mage, has spent years amassing a collection of n mystical artifacts. Each artifact is imbued with a certain amount of power, represented by a non-negative integer. Recently, Justin stumbled upon a legendary spell called the "k-fusion," a technique said to enhance his artifacts to unprecedented levels.

With the "k-fusion" spell, Justin can take exactly k artifacts and fuse them into a single artifact. The power of this newly formed artifact is the product of the powers of the k consumed artifacts. However, this process is irreversible, as the original k artifacts are forever lost in the fusion.

Justin is determined to use this spell to craft the most powerful artifact possible. He performs some (possibly zero) number of k-fusions which maximizes the maximum power of his remaining artifacts. Once finished, Justin challenges you to calculate the maximum power of the remaining artifacts.

But there's a twist! The result could be an astronomically large number, and Justin doesn't want to deal with such huge values. Instead, he asks you to compute the remainder of the maximum power when divided by 998244353 – a prime number of great significance in his magical research.

Can you help Justin determine the remainder of the maximum possible power of the remaining artifact after his sequence of k-fusions?

Input

This problem contains multiple test cases. The first line of input contains an integer T ($1 \le T \le 1000$), denoting the number of test cases.

For each test case, there are two lines of input. The first line of input contains two integers n, k ($2 \le n \le 2 \times 10^5, 2 \le k \le n$), denoting the initial number of artifacts and the parameter of k-fusion.

The second line of input contains n non-negative integers $p_1, p_2, \ldots, p_n$ ($0 \le p_i \le 10^9$), where p_i is the power of the i-th artifact.

It is guaranteed that the sum of n over all test cases will not exceed 2×10^5.

Output

For each test case, output an integer in one line, denoting the answer to Justin's challenge.

Example

standard input	standard output
3 8 3 44 5 2018 8 8 2024 8 28 5 4 4 5 5 1 0 5 2 0 0 0 0 0	923923948 100 0