k Operations

Input file:	*standard input*
Output file:	*standard output*
Time limit:	4 seconds
Memory limit:	1024 mebibytes

Usually, whenever Akulyat encounters a problem involving queries and mysterious operations, he immediately delegates it to KiKoS. To educate Akulyat during the Pafos camp, KiKoS decided to give him this problem. But, well, the plan failed: Akulyat found the sea and was spending all his time there. Well, at least now there is an unsolved problem for you.

You are given an array $a = [a_1, a_2, \ldots, a_n]$ of n positive integers.

We define $f_k(b_1, b_2, \ldots, b_m)$ to be the minimum possible product of the array $[b_1, \ldots, b_m]$ that can be obtained by applying the following operation at most k times:

- Select any index i such that $b_i > 1$ and assign $b_i := b_i - 1$.

Your task is to process q queries. Each query is given as three integers ℓ, r, and k, and asks you to compute the value of $f_k(a_\ell, a_{\ell+1}, \ldots, a_r)$: the minimum possible product of the subarray a_ℓ through a_r after applying at most k operations, as described above.

Since the answer may be large, output it modulo 998 244 353.

Input

The first line contains two integers n and q ($1 \le n \le 2 \cdot 10^5$, $1 \le q \le 5 \cdot 10^5$): the size of the array and the number of queries.

The second line contains n integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 998\,244\,352$).

Each of the next q lines contains three integers ℓ, r, and k ($1 \le \ell \le r \le n$, $0 \le k \le 10^{18}$) describing a query on the subarray from index ℓ to r, with at most k allowed operations.

Output

For each query, print one integer: the value of $f_k(a_\ell, \ldots, a_r)$ modulo 998 244 353.

Example

standard input	*standard output*
5 2 1 2 3 4 5 1 2 3 4 5 1	1 15

Note

The product is computed after all operations are applied, and only the final result should be taken modulo 998 244 353.