K Isfahan Souvenir

Time limit: 3.0s
Memory limit: 64MB

Naser Khosrow, during his travels to Isfahan, decided to buy all possible consecutive subsequences of a magical array as souvenirs. The price of a consecutive subsequence is calculated as price = min × max × l where min is the smallest number in the consecutive subsequence, max is the largest number, and l is the length of the consecutive subsequence. Find the total price of all consecutive subsequences modulo 10^9.

Input

The first line of input contains an integer n ($1 \leq n \leq 5 \times 10^5$). Each of the following n lines contains a member of the array. The members of the array are integers from the interval $[1, 10^8]$.

Output

Print the total price of all consecutive subsequences modulo 10^9.

Samples

Sample input 1	Sample output 1
2 1 2	9

Sample input 2	Sample output 2
4 2 4 1 3	100

Sample input 3	Sample output 3
6 8 2 3 9 7 4	1334