

Problem G. Range Product

Time limit 1000 ms
Mem limit 262144 kB
OS Windows

Given an array of N integers, your task is to process Q queries of the form: what is the **product** of values in range $[a, b]$? Since this value will be huge, output it modulo 1000000007 . For example, if the product of some range is 1000000010 you have to output 3 because $1000000010 \bmod 1000000007 = 3$.

Input

The first line contains two integers: N the size of the array, $2 \leq N \leq 10^5$, and Q the number of queries $1 \leq Q \leq 10^5$.

Then follow N integers a_i , $1 \leq a_i \leq 10^6$ representing the array.

Then follow Q lines, each containing two integers L, R . $1 \leq L < R \leq N$

Output

Print the result of each query.

Examples

Input	Output
5 10 1 2 3 4 5 1 2 1 3 1 4 1 5 2 3 2 4 2 5 3 4 3 5 4 5	2 6 24 120 6 24 120 12 60 20

Input	Output
15 2 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 1 8 3 15	43046721 865810542