

PROBLEMS SUBMIT CODE MY SUBMISSIONS STATUS STANDINGS CUSTOM INVOCATION

### E. RADiant queries

time limit per test: 4 seconds  
memory limit per test: 256 megabytes

Let  $\text{rad}(n)$  denote the product of all distinct prime divisors of the number  $n$ . For example,  $\text{rad}(504) = \text{rad}(2^3 \cdot 3^2 \cdot 7) = 2 \cdot 3 \cdot 7 = 42$ . We define  $\text{rad}(1) = 1$ .

The statement of this problem is simple: you have an array  $a$  of size  $n$ . You are given  $q$  queries  $[\ell; r]$ , and you need to compute  $\text{rad}$  of the product of the numbers  $a_\ell, a_{\ell+1}, \dots, a_r$ , that is:

$$\text{rad}\left(\prod_{i=\ell}^r a_i\right) = \text{rad}\left(a_\ell \times a_{\ell+1} \times \dots \times a_r\right)$$

Since this number can be quite large, output it modulo  $10^9 + 7$ .

#### Input

The first line of input contains two numbers  $n, q$  ( $1 \leq n, q \leq 5 \cdot 10^5$ ), the number of elements in the array and the number of queries.

The second line of input contains  $n$  numbers  $a_i$  ( $1 \leq a_i \leq 2 \cdot 10^5$ ), the array  $a$ .

In the following  $q$  lines, two numbers  $\ell, r$  ( $1 \leq \ell \leq r \leq n$ ) are given, which are the boundaries of the next query.

#### Output

In  $q$  lines of output, print one number per line, the answer to the problem modulo  $10^9 + 7$ .

#### Scoring

№	Additional Constraints			Points	Req. Groups	Comment
	$n$	$q$	$a_i$			
0	—	—	—	—	—	Tests from the statement
1	$n \leq 100$	$q \leq 100$	$a_i \leq 100$	8	0	—
2		—		9	1	—
3	$n \leq 1000$	$q \leq 1000$	$a_i \leq 1000$	10	1	—
4		—		11	1 – 3	—
5	—	—	—	11	—	All $a_i$ are prime and distinct
6	—	—	$a_i \leq 300$	12	0 – 2	—
7	$n \leq 5 \cdot 10^4$	$q \leq 5 \cdot 10^4$	—	7	0, 1, 3	—
8	$n \leq 10^5$	$q \leq 10^5$	—	4	7	—
9	$n \leq 2 \cdot 10^5$	$q \leq 2 \cdot 10^5$	—	4	8	—
10	$n \leq 3 \cdot 10^5$	$q \leq 3 \cdot 10^5$	—	3	9	—
11	$n \leq 4 \cdot 10^5$	$q \leq 4 \cdot 10^5$	—	2	10	—
12	—	—	—	7	5	All $a_i$ are prime
13	—	—	—	12	0 – 12	—

#### Examples

input

Copy

5 6  
42 35 11 26 13  
1 3  
2 4  
3 5  
1 5  
2 2  
4 5

output

Copy

2310  
10010  
286  
30030  
35  
26

input

Copy

2 1  
2 2  
1 2

output

Copy

2

#### Spring Lyceum Second school olympiad in informatics 2025

Finished

Practice



#### → Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

#### → Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

#### → Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

#### → Last submissions

Submission	Time	Verdict
<a href="#">318943646</a>	May/09/2025 16:18	Perfect result: 100 points
<a href="#">318943291</a>	May/09/2025 16:15	Partial result: 38 points
<a href="#">318942728</a>	May/09/2025 16:10	Partial result: 88 points
<a href="#">318938083</a>	May/09/2025 15:29	Partial result: 88 points
<a href="#">318937341</a>	May/09/2025 15:22	Partial result: 49 points
<a href="#">318937211</a>	May/09/2025 15:21	Partial result: 49 points
<a href="#">318936055</a>	May/09/2025 15:11	Partial result: 56 points
<a href="#">318925340</a>	May/09/2025 13:22	Partial result: 49 points
<a href="#">318924913</a>	May/09/2025 13:17	Partial result: 63 points
<a href="#">318924169</a>	May/09/2025 13:09	Partial result: 49 points