

Pairwise Product

Input file: **standard input**
Output file: **standard output**
Time limit: 3 seconds
Memory limit: 256 megabytes

You are given an array of integers a_1, a_2, \dots, a_n . Your task is to answer queries of the following type:

- For given l, r , output the sum of products for all pairs $l \leq i < j \leq r$. Formally, you need to compute $\sum_{l \leq i < j \leq r} a_i \cdot a_j$. The answer may be large, so output it modulo $10^9 + 7$.

Input

The first line contains a single number n ($2 \leq n \leq 2 \cdot 10^5$) — the size of the array a .

The second line contains n integers a_1, \dots, a_n ($1 \leq a_i \leq 10^9$) — the elements of the array.

The third line contains a single integer q ($1 \leq q \leq 2 \cdot 10^5$) — the number of queries.

Each of the next q lines contains two integers l and r ($1 \leq l < r \leq n$).

Output

Output q lines — the answer to each query.

Scoring

In this problem, there are conditional blocks. If your solution works correctly for certain constraints, it will receive a certain number of points. Please note that the evaluation is still in the testing phase.

1. (29 points): $n \leq 100, q \leq 100$;
2. (36 points): $n \leq 10\,000, q \leq 100$;
3. (35 points): without additional constraints.

Examples

standard input	standard output
2 1 2 1 1 2	2
5 2 3 4 5 6 6 1 4 3 5 1 5 2 3 4 5 2 5	71 74 155 12 30 119
5 100 10000 100000 1000000 10000000 1 1 5	110921516