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# **August Easy '21**

LIVE

Aug 07, 2021, 09:30 AM IST - Aug 07, 2021, 12:30 PM IST

INSTRUCTIONS PROBLEMS SUBMISSIONS LEADERBOARD ANALYTICS JUDGE

← Problems / Minimize a product

Minimize a product

You are given an array  $m{A}$  of  $m{N}$  integers.

Also, you are given Q queries of the following type:

- $1 \ x \ v$ : Change the value of the element at  $x^{th}$  index to v i.e. set A[x] = v.
- 2 l r: Determine the number of pairs (i, j) such that:
  - $\circ$   $l \leq i < j \leq r$
  - $\circ$   $A[i] \times A[j]$  is minimum possible among all such possible pairs of elements

Your task is to determine the sum of answers for queries of Type  ${f 2}$  over all  ${m Q}$  queries.

#### Note

- Assume **1**-based indexing.
- The sum can be very large, print the output in modulo  $10^9 + 7$ .

### Input format

Max. score: 100

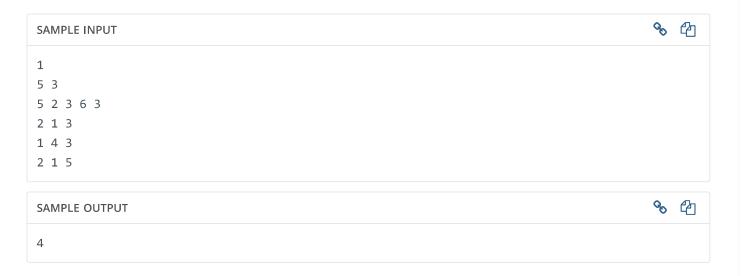
- ullet The first line contains an integer T that denotes the number of test cases.
- For each test case:
  - $\circ$  The first line contains two space-separated integers that denotes  $N\,Q$ .
  - $\circ$  The next line contains N space-separated integers that denotes the array A.
  - $\circ$  The next Q lines contain queries.

### **Output format**

For each test case, print an integer denoting the sum of the answer for all the queries of Type 2 in a new line.

#### Constraints

```
1 \le T \le 10
1 \le N, Q \le 10^5
1 \le l < r \le N
1 \le x \le N
1 \le v, A[i] \le 10^6
```



# Explanation

## For Query 1:

• Pair (2,3) satisfy the required condition as  $A[2] \times A[3] = 6$  is the minimum possible product that can be achieved.

# After Query 2:

• A[4] = 3

# For Query 3:

• Pair (3,4),(4,5),(3,5) satisfy the required condition as  $A[3]\times A[4]=A[3]\times A[5]=A[4]\times A[5]=9$  is the minimum possible product that can be achieved.

Hence, the required answer is 1 + 3 = 4.

Time Limit:	3.0 sec(s) for each input file.
Memory Limit:	256 MB
Source Limit:	1024 KB
Marking Scheme:	Score is assigned if any testcase passes.
Allowed Languages:	Bash, C, C++, C++14, C++17, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, Java 14, JavaScript(Rhino),
	JavaScript(Node.js), Julia, Kotlin, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python,
	Python 3, Python 3.8, Racket, Ruby, Rust, Scala, Swift-4.1, Swift, TypeScript, Visual Basic



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