Garage

Lately, Slavko's been studying sequences of natural numbers. He finds a sequence interesting if the greatest common divisor of all the elements from the sequence is greater than 1.

Yesterday, he found a sequence consisting of N natural numbers in his garage. Since he was really bored, he decided to keep himself occupied by asking simple queries. Each query can be one of the two types:

1. Change the value at position X in the sequence to V.
2. Determine the number of interesting contiguous subarrays contained in the interval [L, R] of the sequence.

Input

The first line of input contains the numbers N and Q ($1 \le N, Q \le 10^5$), representing the number of elements in the sequence and the number of queries, respectively.

The following line contains N natural numbers Ai ($1 \le Ai \le 10^9$) that represent the numbers in the initial sequence.

Each of the following Q lines contains a query of the following form:

- The first number in the line can be 1 or 2 and represents the type of the query.
- If the query is of type 1, two numbers follow, X ($1 \le X \le N$) and V ($1 \le V \le 10^9$) from the task.
- If the query is of type 2, two numbers follow, L and R ($1 \le L \le R \le N$) that represent the left and right interval boundary.

Output

For each query of type 2, output the number of interesting contiguous subarrays from the task.

Sample input	Sample output
5 1 8 4 3 9 1 2 2 5	4
5 3 2 3 6 4 1 2 1 4 1 3 1 2 3 5	6 1
4 3 2 2 2 2 2 1 4 1 2 3 2 1 4	10 5

Clarification of the first test case

The interval from the 2 nd to the 5 th position consists of numbers (4, 3, 9, 1). In it, the following are interesting contiguous subarrays (denoted with square brackets):
[4] 3 9 1, 4 [3] 9 1, 4 3 [9] 1, 4 [3 9] 1