

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 ($1 \leq N, Q \leq 10^5$), representing the number of elements in the sequence and the number of queries, respectively.

The following line contains N natural numbers A_i ($1 \leq A_i \leq 10^9$) 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 ($1 \leq X \leq N$) and V ($1 \leq V \leq 10^9$) from the task.
- If the query is of type 2, two numbers follow, L and R ($1 \leq L \leq R \leq N$) 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 TESTS

input

```
5 1
8 4 3 9 1
2 2 5
```

output

```
4
```

input

```
5 3
2 3 6 4 1
2 1 4
1 3 1
2 3 5
```

output

```
6
1
```

input

```
4 3
2 2 2 2
2 1 4
1 2 3
2 1 4
```

output

```
10
5
```

Clarification of the first test case:

The interval from the 2nd to the 5th 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