Codeforces Testing Round #1

A. 123-sequence

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

There is a given sequence of integers $a_1, a_2, \ldots, a_n$, where every number is from 1 to 3 inclusively. You have to replace the minimum number of numbers in it so that all the numbers in the sequence are equal to each other.

Input
The first line contains an integer n ($1 \le n \le 10^6$). The second line contains a sequence of integers $a_1, a_2, \ldots, a_n$ ($1 \le a_i \le 3$).

Output
Print the minimum number of replacements needed to be performed to make all the numbers in the sequence equal.

Examples

input
9 1 3 2 2 2 1 1 2 3
output
5

Note
In the example all the numbers equal to 1 and 3 should be replaced by 2.

B. Right Triangles

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given a $n \times m$ field consisting only of periods (`'.'`) and asterisks (`'*'`). Your task is to count all right triangles with two sides parallel to the square sides, whose vertices are in the centers of `'*'`-cells. A right triangle is a triangle in which one angle is a right angle (that is, a 90 degree angle).

Input

The first line contains two positive integer numbers n and m ($1 \le n, m \le 1000$). The following n lines consist of m characters each, describing the field. Only `'.'` and `'*'` are allowed.

Output

Output a single number — total number of square triangles in the field. Please, do not use `%lld` specificator to read or write 64-bit integers in C++. It is preffered to use `cout` (also you may use `%I64d`).

Examples

input
2 2 ** *.
output
1

input
3 4 *..* .**. *.**
output
9

C. Circular RMQ

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given circular array $a_0, a_1, ..., a_{n-1}$. There are two types of operations with it:

- $inc(lf, rg, v)$ — this operation increases each element on the segment $[lf, rg]$ (inclusively) by v;
- $rmq(lf, rg)$ — this operation returns minimal value on the segment $[lf, rg]$ (inclusively).

Assume segments to be circular, so if $n = 5$ and $lf = 3, rg = 1$, it means the index sequence: $3, 4, 0, 1$.

Write program to process given sequence of operations.

Input

The first line contains integer n ($1 \le n \le 200000$). The next line contains initial state of the array: $a_0, a_1, ..., a_{n-1}$ ($-10^6 \le a_i \le 10^6$), a_i are integer. The third line contains integer m ($0 \le m \le 200000$), m — the number of operartons. Next m lines contain one operation each. If line contains two integer lf, rg ($0 \le lf, rg \le n - 1$) it means rmq operation, it contains three integers lf, rg, v ($0 \le lf, rg \le n - 1; -10^6 \le v \le 10^6$) — inc operation.

Output

For each rmq operation write result for it. Please, do not use `%lld` specificator to read or write 64-bit integers in C++. It is preffered to use `cout` (also you may use `%I64d`).

Examples

input
4 1 2 3 4 4 3 0 3 0 -1 0 1 2 1

output
1 0 0