

E. Sereja and Squares

time limit per test: 4 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Sereja painted n points on the plane, point number i ($1 \leq i \leq n$) has coordinates $(i, 0)$. Then Sereja marked each point with a small or large English letter. Sereja don't like letter "x", so he didn't use it to mark points. Sereja thinks that the points are marked beautifully if the following conditions holds:

- all points can be divided into pairs so that each point will belong to exactly one pair;
- in each pair the point with the lesser abscissa will be marked with a small English letter and the point with the larger abscissa will be marked with the same large English letter;
- if we built a square on each pair, the pair's points will be the square's opposite points and the segment between them will be the square's diagonal, then among the resulting squares there won't be any intersecting or touching ones.

Little Petya erased some small and all large letters marking the points. Now Sereja wonders how many ways are there to return the removed letters so that the points were marked beautifully.

Input

The first line contains integer n the number of points ($1 \leq n \leq 10^5$). The second line contains a sequence consisting of n small English letters and question marks — the sequence of letters, that mark points, in order of increasing x -coordinate of points. Question marks denote the points without letters (Petya erased them). It is guaranteed that the input string doesn't contain letter "x".

Output

In a single line print the answer to the problem modulo 4294967296. If there is no way to return the removed letters, print number 0.

Please, do not write the `%lld` specifier to read or write 64-bit integers in C++. It is preferred to use the `cin`, `cout` streams or the `%I64d` specifier.

Examples

input
4 a???
output
50

input
4 abc?
output
0

input
6 abc???
output
1