A. Phone Code

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

Polycarpus has n friends in Tarasov city. Polycarpus knows phone numbers of all his friends: they are strings $s_1, s_2, \ldots, s_n$. All these strings consist only of digits and have the same length.

Once Polycarpus needed to figure out Tarasov city phone code. He assumed that the phone code of the city is the longest common prefix of all phone numbers of his friends. In other words, it is the longest string c which is a prefix (the beginning) of each s_i for all i $(1 \le i \le n)$. Help Polycarpus determine the length of the city phone code.

Input

The first line of the input contains an integer n $(2 \le n \le 3 \cdot 10^4)$ — the number of Polycarpus's friends. The following n lines contain strings $s_1, s_2, \ldots, s_n$ — the phone numbers of Polycarpus's friends. It is guaranteed that all strings consist only of digits and have the same length from 1 to 20, inclusive. It is also guaranteed that all strings are different.

Output

Print the number of digits in the city phone code.

Examples

input
4 00209 00219 00999 00909
output
2

input
2 1 2
output
0

input
3 77012345678999999999 77012345678901234567 77012345678998765432
output
12

Note

A prefix of string t is a string that is obtained by deleting zero or more digits from the end of string t. For example, string "00209" has 6 prefixes: "" (an empty prefix), "0", "00", "002", "0020", "00209".

In the first sample the city phone code is string "00".

In the second sample the city phone code is an empty string.

In the third sample the city phone code is string "770123456789".