Fast Ferret Transform (ferret)

Ferris the Ferret has recently been learning about numbers. He likes all kinds of activities with numbers: solving sudokus, stealing credit card numbers, performing discrete convolutions... While these activities do certainly involve numbers, they have one unfortunate thing in common: you don't actually need to know math to do them. In fact, Ferris doesn't even know how to increase any number by 1, but he is now determined to learn.

Ferris has a list $\boldsymbol{v}$ of N numbers, $\boldsymbol{v} = [v_1, \ldots, v_N]$. He wants to increase all elements in the list by 1, and obtain the list $\boldsymbol{v} + \mathbf{1} = [v_1 + 1, \ldots, v_N + 1]$, but he has no idea of what this list will look like. Luckily, he is very good at writing and deleting digits, so you came up with an idea to help him.

You have defined the *Ferret transform* of a list $\boldsymbol{v}$ as the string $s_{\boldsymbol{v}}$, obtained by treating all numbers in $\boldsymbol{v}$ as strings and concatenating them.

Figure 1: Ferris practicing his favorite activity.

You want to manipulate the Ferret transform $s_{\boldsymbol{v}}$ to obtain the string $s_{\boldsymbol{v+1}}$, which is the Ferret transform of the list $\boldsymbol{v} + \mathbf{1}$, and then transform it back into a list. Your plan is to write down the string $s_{\boldsymbol{v}}$ and then instruct Ferris to insert some digits and remove some digits from it.

Ferris doesn't even understand that the inverse transformation will be ambiguous. All he cares about now is writing and deleting digits. In order to make his learning as efficient as possible, you should minimize the number of digits Ferris has to insert or remove to obtain $s_{\boldsymbol{v+1}}$ from $s_{\boldsymbol{v}}$.

Input

The first line contains an integer N, the size of the list.

Each of the following N lines contains the integer v_i, the i-th element of the list.

> ☞ Note that values of v_i may be very large and may not fit in typical integer variables. It is recommended to read them as strings.

Output

You should output a single line containing a single integer: the minimum number of insert and delete operations Ferris needs to make to obtain $s_{\boldsymbol{v+1}}$ from $s_{\boldsymbol{v}}$.

Constraints

- $1 \leq N \leq 100$.
- $0 \leq v_i < 10^{10^5}$.
- The total number of digits in $s_{\boldsymbol{v}}$ is at most 10^5.
- Each v_i is a standard base-10 number: it does not have leading zeros, unless $v_i = 0$.

Examples

input	output
3 0 19 8	4
2 111111111111111111111111111111 999999999999999999999999999999	61

Explanation

In the **first sample case**, $\boldsymbol{v} = [0, 19, 8]$ and $\boldsymbol{v} + \mathbf{1} = [1, 20, 9]$, therefore $s_{\boldsymbol{v}}$ = "0198" and $s_{\boldsymbol{v}+\mathbf{1}}$ = "1209". A possible solution is to remove the '0' and the '8' from $s_{\boldsymbol{v}}$, and then insert a '2' and a '0' between the remaining two digits, for a total of 4 operations.

In the **second sample case**, you should remove all '9's and replace them with '0's, and insert a '2' before the last '1'.