

digits

SEASON 8 – SIXTH ROUND



For a natural number X with sum of digits K (in decimal numerical system), we will define $f(X)$ as:

- K , if $1 \leq X \leq 9$
- $f(K)$, if $X > 9$

For example:

$$f(123) = f(6) = 6$$

$$f(444) = f(12) = f(3) = 3$$

You are given a number N , such that it **doesn't contain the digit 0 in its decimal notation**. Let's consider all **subsequences of consecutive digits of N** and apply the function $f()$ to each of them. It is obvious that the result will always be an integer from 1 to 9.

Write a program that for every integer from 1 to 9, counts the number of **subsequences of consecutive digits of N** that have it as a result of $f()$ applied to them.

Input

The input file `digits.in` contains one line with the number N .

Output

The output file `digits.out` must contain one line with 9 numbers – the number of subsequences of consecutive digits of N with result of $f()$ applied to them being equal to 1, 2, 3, ..., 9 (in this order).

Constraints

$$1 \leq N < 10^{100\,000}$$

Time limit: 1 sec

Memory limit: 256 MB

digits

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Example test:

Input (digits.in)	Output (digits.out)
34288	1 1 1 2 1 1 3 3 2

Explanation:

The sequences of consecutive digits of 34288 are:

3, 4, 2, 8, 8, 34, 42, 28, 88, 342, 428, 288, 3428, 4288 и 34288

$$f(28) = 1$$

$$f(2) = 2$$

$$f(3) = 3$$

$$f(4) = f(4288) = 4$$

$$f(428) = 5$$

$$f(42) = 6$$

$$f(88) = f(34288) = f(34) = 7$$

$$f(8) = f(8) = f(3428) = 8$$

$$f(288) = f(342) = 9$$