

BIUPC 2.0 2024 Mock Contest (Junior)

A. Way Too Long Words

1 second, 256 megabytes

Sometimes some words like "localization" or "internationalization" are so long that writing them many times in one text is quite tiresome.

Let's consider a word *too long*, if its length is **strictly more** than 10 characters. All too long words should be replaced with a special abbreviation.

This abbreviation is made like this: we write down the first and the last letter of a word and between them we write the number of letters between the first and the last letters. That number is in decimal system and doesn't contain any leading zeroes.

Thus, "localization" will be spelt as "l10n", and "internationalization" will be spelt as "i18n".

You are suggested to automatize the process of changing the words with abbreviations. At that all too long words should be replaced by the abbreviation and the words that are not too long should not undergo any changes.

Input

The first line contains an integer n ($1 \leq n \leq 100$). Each of the following n lines contains one word. All the words consist of lowercase Latin letters and possess the lengths of from 1 to 100 characters.

Output

Print n lines. The i -th line should contain the result of replacing of the i -th word from the input data.

input

```
4
word
localization
internationalization
pneumonoultramicroscopicsilicovolcanoconiosis
```

output

```
word
l10n
i18n
p43s
```

B. Petya and Strings

2 seconds, 256 megabytes

Little Petya loves presents. His mum bought him two strings of the same size for his birthday. The strings consist of uppercase and lowercase Latin letters. Now Petya wants to compare those two strings lexicographically. The letters' case does not matter, that is an uppercase letter is considered equivalent to the corresponding lowercase letter. Help Petya perform the comparison.

Input

Each of the first two lines contains a bought string. The strings' lengths range from 1 to 100 inclusive. It is guaranteed that the strings are of the same length and also consist of uppercase and lowercase Latin letters.

Output

If the first string is less than the second one, print "-1". If the second string is less than the first one, print "1". If the strings are equal, print "0". Note that the letters' case is not taken into consideration when the strings are compared.

A single line contains a non-empty word. This word consists of lowercase and uppercase English letters. The length of the word will not exceed 10^3 .

Output

Output the given word after capitalization.

input
ApPLe
output
ApPLe

input
konjac
output
Konjac

input
aaaa aaaA
output
0

input
abs Abz
output
-1

input
abcdefg AbCdEfF
output
1

If you want more formal information about the lexicographical order (also known as the "dictionary order" or "alphabetical order"), you can visit the following site:

- http://en.wikipedia.org/wiki/Lexicographical_order

C. Word Capitalization

2 seconds, 256 megabytes

Capitalization is writing a word with its first letter as a capital letter. Your task is to capitalize the given word.

Note, that during capitalization all the letters except the first one remains unchanged.

Input

D. Helpful Maths

2 seconds, 256 megabytes

Xenia the beginner mathematician is a third year student at elementary school. She is now learning the addition operation.

The teacher has written down the sum of multiple numbers. Pupils should calculate the sum. To make the calculation easier, the sum only contains numbers 1, 2 and 3. Still, that isn't enough for Xenia. She is only beginning to count, so she can calculate a sum only if the summands follow in non-decreasing order. For example, she can't calculate sum $1+3+2+1$ but she can calculate sums $1+1+2$ and $3+3$.

You've got the sum that was written on the board. Rearrange the summands and print the sum in such a way that Xenia can calculate the sum.

Input

The first line contains a non-empty string s — the sum Xenia needs to count. String s contains no spaces. It only contains digits and characters "+". Besides, string s is a correct sum of numbers 1, 2 and 3. String s is at most 100 characters long.

Output

Print the new sum that Xenia can count.

input

3+2+1

output

1+2+3

input

1+1+3+1+3

output

1+1+1+3+3

input

2

output

2

E. Elephant

1 second, 256 megabytes

An elephant decided to visit his friend. It turned out that the elephant's house is located at point 0 and his friend's house is located at point x ($x > 0$) of the coordinate line. In one step the elephant can move 1, 2, 3, 4 or 5 positions forward. Determine, what is the minimum number of steps he need to make in order to get to his friend's house.

Input

The first line of the input contains an integer x ($1 \leq x \leq 1\,000\,000$) — The coordinate of the friend's house.

Output

Print the minimum number of steps that elephant needs to make to get from point 0 to point x .

input

5

output

1

input

12

output

3

In the first sample the elephant needs to make one step of length 5 to reach the point x .

In the second sample the elephant can get to point x if he moves by 3, 5 and 4. There are other ways to get the optimal answer but the elephant cannot reach x in less than three moves.

F. Beautiful Array

1 second, 1024 megabytes



Image generated by ChatGPT 4o.

A-Ming's birthday is coming and his friend A-May decided to give him an integer array as a present. A-Ming has two favorite numbers a and b , and he thinks an array is *beautiful* if its mean is exactly a and its median is exactly b . Please help A-May find a beautiful array so her gift can impress A-Ming.

The mean of an array is its sum divided by its length. For example, the mean of array $[3, -1, 5, 5]$ is $12 \div 4 = 3$.

The median of an array is its middle element after sorting if its length is odd, or the mean of two middle elements after sorting if its length is even. For example, the median of $[1, 1, 2, 4, 8]$ is 2 and the median of $[3, -1, 5, 5]$ is $(3 + 5) \div 2 = 4$.

Note that the mean and median are not rounded to an integer. For example, the mean of array $[1, 2]$ is 1.5.

Input

The only line contains two integers a and b .

- $-100 \leq a, b \leq 100$.
- The length of the array must be between 1 and 1000.
- The elements of the array must be integers and their absolute values must not exceed 10^6 .

Output

In the first line, print the length of the array.

In the second line, print the elements of the array.

If there are multiple solutions, you can print any. It can be proved that, under the constraints of the problem, a solution always exists.

input

3 4

output

4
3 -1 5 5

input

-100 -100

output

1
-100

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