Java Assignment 1 ESEA

Problem 1:

Sometimes some words as "globalization" 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 compression.
This compression 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.
Thus, " globalization " will be spelt as "g11n", and "internationalization» will be spelt as "i18n".
You are suggested to automatize the process of changing the words with compression.
At that all too long words should be replaced by the compression and the words that are not too long shouldn't be changes.

Input

The first line contains an integer n ($1 \le n \le 100$). 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

Problem 2:

Our friend started to attend programming lessons. On the first lesson his task was to write a simple program. The program was supposed to do the following: in the given string, consisting if uppercase and lowercase Latin letters, it:

deletes all the vowels,

inserts a character "." before each consonant,

replaces all uppercase consonants with corresponding lowercase ones.

Vowels are letters "A", "O", "Y", "E", "U", "I", and the rest are consonants. The program's input is exactly one string, it should return the output as a single string, resulting after the program's processing the initial string.

Help Our friend cope with this easy task.

Input

The first line represents input string of Our friend's program. This string only consists of uppercase and lowercase Latin letters and its length is from 1 to 100, inclusive.

Output

Print the resulting string. It is guaranteed that this string is not empty.

---

input

tour

output

.t.r

input

aBAcAba

output

.b.c.b

Problem 3:

Our friend 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 Our friend 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.

input

aaaa

aaaA

output

0

input

abs

Abz

output

-1

input

abcdefg

AbCdEfF

output

1

Problem 4:

Our friend 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 summons and print the sum in such a way that Our friend can calculate the sum.

Input

The first line contains a non-empty string s — the sum Our friend 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 Our friend 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

Problem 5:

wHAT DO WE NEED cAPS LOCK FOR?

Caps lock is a computer keyboard key. Pressing it sets an input mode in which typed letters are capital by default. If it is pressed by accident, it leads to accidents like the one we had in the first passage.

Let's consider that a word has been typed with the Caps lock key accidentally switched on, if:

either it only contains uppercase letters;

or all letters except for the first one are uppercase.

In this case we should automatically change the case of all letters. For example, the case of the letters that form words "hELLO", "HTTP", "z" should be changed.

Write a program that applies the rule mentioned above. If the rule cannot be applied, the program should leave the word unchanged.

Input

The first line of the input data contains a word consisting of uppercase and lowercase Latin letters. The word's length is from 1 to 100 characters, inclusive.

Output

Print the result of the given word's processing.

input

cAPS

output

Caps

input

LOOK

output

look

input

UNiverSuTY

output

UNiverSuTY

Problem 6:

Our friend has recently learned to type and log on to the Internet. He immediately entered a chat room and decided to say hello to everybody. Our friend typed the word s. It is considered that Our friend managed to say hello if several letters can be deleted from the typed word so that it resulted in the word "hello". For example, if Our friend types the word "ahhellllloou", it will be considered that he said hello, and if he types "hlelo", it will be considered that Our friend got misunderstood and he didn't manage to say hello. Determine whether Our friend managed to say hello by the given word s.

Input

The first and only line contains the word s, which Our friend typed. This word consists of small Latin letters, its length is no less that 1 and no more than 100 letters.

Output

If Our friend managed to say hello, print "YES", otherwise print "NO".

Input

ahhellllloou

output

YES

input

hlelo

output

NO

==========

Problem 7:

The translation from the x language into the y language is not an easy task. Those languages are very similar: a word differs from a x language word with the same meaning a little: it is spelled (and pronounced) reversely. For example, a x language word code corresponds to a y language word edoc. However, it's easy to make a mistake during the «translation». Our friend translated word s from x into y as t. Help him: find out if he translated the word correctly.

Input

The first line contains word s, the second line contains word t. The words consist of lowercase Latin letters. The input data do not consist

unnecessary spaces. The words are not empty and their lengths do not exceed 100 symbols.

Output

If the word t is a word s, written reversely, print YES, otherwise print NO.

---

input

code

edoc

output

YES

input

abb

aba

output

NO

input

code

code

output

NO

Problem 8:

Out friend works as a DJ in the best nightclub, and he often uses dubstep music in his performance. Recently, he has decided to take a couple of old songs and make dubstep remixes from them.

Let's assume that a song consists of some number of words. To make the dubstep remix of this song, Out friend inserts a certain number of words "WUB" before the first word of the song (the number may be zero), after the last word (the number may be zero), and between words (at least one between any pair of neighbouring words), and then the boy glues together all the words, including "WUB", in one string and plays the song at the club.

For example, a song with words "I AM X" can transform into a dubstep remix as "WUBWUBIWUBAMWUBWUBX" and cannot transform into "WUBWUBIAMWUBX".

Recently, Out friend has heard Our friend ‘s new dubstep track, but since he isn't into modern music, he decided to find out what was the initial song that Our friend remixed. Help Out friend restore the original song.

Input

The input consists of a single non-empty string, consisting only of uppercase English letters, the string's length doesn't exceed 200 characters. It is guaranteed that before Our friend remixed the song, no word contained substring "WUB" in it; Our friend didn't change the word order. It is also guaranteed that initially the song had at least one word.

Output

Print the words of the initial song that Out friend used to make a dubsteb remix. Separate the words with a space.

---

input

WUBWUBABCWUB

output

ABC

input

WUBWEWUBAREWUBWUBTHEWUBCHAMPIONSWUBMYWUBFRIEND

WUB

output

WE ARE THE CHAMPIONS MY FRIEND

Problem 9:

Our friend is an active Internet user. One day he came across an Internet resource he liked, so he wrote its address in the notebook. We know that the address of the written resource has format:

<protocol>://<domain>.ru[/<context>]

where:

<protocol> can equal either "http" (without the quotes) or "ftp" (without the quotes),

<domain> is a non-empty string, consisting of lowercase English letters,

the /<context> part may not be present. If it is present, then <context> is a non-empty string, consisting of lowercase English letters.

If string <context> isn't present in the address, then the additional character "/" isn't written. Thus, the address has either two characters "/" (the ones that go before the domain), or three (an extra one in front of the context).

When the boy came home, he found out that the address he wrote in his notebook had no punctuation marks. Our friend must have been in a lot of hurry and didn't write characters ":", "/", ".".

Help Our friend to restore the possible address of the recorded Internet resource.

Input

The first line contains a non-empty string that Our friend wrote out in his notebook. This line consists of lowercase English letters only.

It is guaranteed that the given string contains at most 50 letters. It is guaranteed that the given string can be obtained from some correct Internet resource address, described above.

Output

Print a single line — the address of the Internet resource that Our friend liked. If there are several addresses that meet the problem limitations, you are allowed to print any of them.

---

input

httpsunrux

output

http://sun.ru/x

input

ftphttprururu

output

ftp://http.ru/ruru

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Problem 10:

You are given the string s of length n and the numbers p, q. Split the string s to pieces of length p and q.

For example, the string "Hello" for p = 2, q = 3 can be split to the two strings "Hel" and "lo" or to the two strings "He" and "llo".

Note it is allowed to split the string s to the strings only of length p or to the strings only of length q (see the second sample test).

Input

The first line contains three positive integers n, p, q ($1 \le p, q \le n \le 100$).

The second line contains the string s consists of lowercase and uppercase Latin letters and digits.

Output

If it's impossible to split the string s to the strings of length p and q print the only number "-1".

Otherwise in the first line print integer k — the number of strings in partition of s.

Each of the next k lines should contain the strings in partition. Each string should be of the length p or q. The string should be in order of their appearing in string s — from left to right.

If there are several solutions print any of them.

input

5 2 3

Hello

output

2

He

llo

input

10 9 5

Codeforces

output

2

Codef

orces

input

6 4 5

Privet

output

-1

input

8 1 1

abacabac

output

8

a

b

a

c

a

b

a

c

Problem 11:

Our friend is very upset that many people on the Net mix uppercase and lowercase letters in one word. That's why he decided to invent an extension for his favorite browser that would change the letters' register in every word so that it either only consisted of lowercase letters or, vice versa, only of uppercase ones. At that as little as possible letters should be changed in the word. For example, the word HoUse must be replaced with house, and the word ViP — with VIP. If a word contains an equal number of uppercase and lowercase letters, you should replace all the letters with lowercase ones. For example, maTRIx should be replaced by matrix. Your task is to use the given method on one given word.

Input

The first line contains a word s — it consists of uppercase and lowercase Latin letters and possesses the length from 1 to 100.

Output

Print the corrected word s. If the given word s has strictly more uppercase letters, make the word written in the uppercase register, otherwise - in the lowercase one.

---

input

HoUse

output

house

input

ViP

output

VIP

input

maTRIx

output

matrix

Problem 12:

A string is called a k-string if it can be represented as k concatenated copies of some string. For example, the string "aabaabaabaab" is at the same time a 1-string, a 2-string and a 4-string, but it is not a 3-string, a 5-string, or a 6-string and so on. Obviously any string is a 1-string.

You are given a string s, consisting of lowercase English letters and a positive integer k. Your task is to reorder the letters in the string s in such a way that the resulting string is a k-string.

Input

The first input line contains integer k ($1 \le k \le 1000$). The second line contains s, all characters in s are lowercase English letters. The string length s satisfies the inequality $1 \le |s| \le 1000$, where $|s|$ is the length of string s.

Output

Rearrange the letters in string s in such a way that the result is a k-string. Print the result on a single output line. If there are multiple solutions, print any of them.

If the solution doesn't exist, print "-1" (without quotes).

---

input

2

aazz

output

azaz

input

3

abcabcabz

output

-1

==========

Problem 13:

Our friend is trying to clean a room, which is divided up into an n by n grid of squares. Each square is initially either clean or dirty. Our friend can sweep her broom over columns of the grid. Her broom is very strange: if she sweeps over a clean square, it will become dirty, and if she sweeps over a dirty square, it will become clean. She wants to sweep some columns of the room to maximize the number of rows that are completely clean. It is not allowed to sweep over the part of the column, Our friend can only sweep the whole column.
Return the maximum number of rows that she can make completely clean.

Input

The first line of input will be a single integer n ($1 \le n \le 100$).
The next n lines will describe the state of the room. The i-th line will contain a binary string with n characters denoting the state of the i-th row of the room. The j-th character on this line is '1' if the j-th square in the i-th row is clean, and '0' if it is dirty.

Output

The output should be a single line containing an integer equal to a maximum possible number of rows that are completely clean.

---

input

4

0101

1000

1111

0101

output

2

input

3

111

111

111

output

3

Problem 14:

You are solving the crossword problem K from IPSC 2014. You solved all the clues except for one: who does Our friend evolve into? You are not very into pokemons, but quick googling helped you find out, that Our friend can evolve into eight different pokemons: [Vaporeon, Jolteon, Flareon, Espeon, Umbreon, Leafeon, Glaceon, and Sylveon]. You know the length of the word in the crossword, and you already know some letters. Designers of the crossword made sure that the answer is unambiguous, so you can assume that exactly one pokemon out of the 8 that Our friend evolves into fits the length and the letters given. Your task is to find it.

Input

First line contains an integer n ($6 \leq n \leq 8$) – the length of the string.
Next line contains a string consisting of n characters, each of which is either a lower case English letter (indicating a known letter) or a dot character (indicating an empty cell in the crossword).

Output

Print a name of the pokemon that Our friend can evolve into that matches the pattern in the input. Use lower case letters only to print the name (in particular, do not capitalize the first letter).

---

input

7

j……

output

jolteon

input

7

...feon

output

leafeon

input

7

.l.r.o.

output

flareon

==========

Problem 15:

Our friend is a diligent student who never missed a lesson in his five years of studying in the university. He always does his homework on time and passes his exams in time.

During the last lesson the teacher has provided two strings s and t to Our friend. The strings have the same length, they consist of lowercase English letters, string s is lexicographically smaller than string t. Our friend wondered if there is such string that is lexicographically larger than string s and at the same is lexicographically smaller than string t. This string should also consist of lowercase English letters and have the length equal to the lengths of strings s and t.

Let's help Our friend solve this easy problem!

Input

The first line contains string s ($1 \le |s| \le 100$), consisting of lowercase English letters. Here, $|s|$ denotes the length of the string.

The second line contains string t ($|t| = |s|$), consisting of lowercase English letters.

It is guaranteed that the lengths of strings s and t are the same and string s is lexicographically less than string t.

Output

If the string that meets the given requirements doesn't exist, print a single string "No such string" (without the quotes).

If such string exists, print it. If there are multiple valid strings, you may print any of them.

---

input

a

c

output

b

input

aaa

zzz

output

kkk

input

abcdefg

abcdefh

output

No such string

Problem 16:

Our friend has kindly given you a string s consisting of lowercase English letters. You are asked to insert exactly one lowercase English letter into s to make it a palindrome. A palindrome is a string that reads the same forward and backward. For example, "noon", "testset" and "a" are all palindromes, while "test" and "kitayuta" are not.
You can choose any lowercase English letter, and insert it to any position of s, possibly to the beginning or the end of s. You have to insert a letter even if the given string is already a palindrome.
If it is possible to insert one lowercase English letter into s so that the resulting string will be a palindrome, print the string after the insertion. Otherwise, print "NA" (without quotes, case-sensitive). In case there is more than one palindrome that can be obtained, you are allowed to print any of them.

Input

The only line of the input contains a string s ($1 \leq |s| \leq 10$). Each character in s is a lowercase English letter.

Output

If it is possible to turn s into a palindrome by inserting one lowercase English letter, print the resulting string in a single line. Otherwise, print "NA" (without quotes, case-sensitive). In case there is more than one solution, any of them will be accepted.

---

input

revive

output

reviver

input

ee

output

eye

input

kitayuta

output

NA

Problem 17:

You are given two very long integers a, b (leading zeroes are allowed). You should check what number a or b is greater or determine that they are equal.

The input size is very large so don't use the reading of symbols one by one. Instead of that use the reading of a whole line or token.

Input

The first line contains a non-negative integer a.

The second line contains a non-negative integer b.

The numbers a, b may contain leading zeroes. Each of them contains no more than 100 digits.

Output

Print the symbol "<" if a < b and the symbol ">" if a > b. If the numbers are equal print the symbol "=".

---

input

9

10

output

<

input

11

10

output

>

input

00012345

12345

output

=

input

0123

9

output

>

input

0123

111

output

>

Problem 18:

So, the New Year holidays are over. Santa Claus and his colleagues can take a rest and have guests at last. When two "New Year and Christmas Men" meet, their assistants cut out of cardboard the letters from the guest's name and the host's name in honor of this event. Then the hung the letters above the main entrance. One night, when everyone went to bed, someone took all the letters of our characters' names. Then he may have shuffled the letters and put them in one pile in front of the door.

The next morning it was impossible to find the culprit who had made the disorder. But everybody wondered whether it is possible to restore the names of the host and his guests from the letters lying at the door? That is, we need to verify that there are no extra letters, and that nobody will need to cut more letters.

Help the "New Year and Christmas Men" and their friends to cope with this problem. You are given both inscriptions that hung over the front door the previous night, and a pile of letters that were found at the front door next morning.

Input

The input file consists of three lines: the first line contains the guest's name, the second line contains the name of the residence host and the third line contains letters in a pile that were found at the door in the morning. All lines are not empty and contain only uppercase Latin letters. The length of each line does not exceed 100.

Output

Print "YES" without the quotes, if the letters in the pile could be permuted to make the names of the "New Year and Christmas Men". Otherwise, print "NO" without the quotes.

---

input

SANTACLAUS

DEDMOROZ

SANTAMOROZDEDCLAUS

output

YES

input

PAPAINOEL

JOULUPUKKI

JOULNAPAOILELUPUKKI

output

NO

input

BABBONATALE

FATHERCHRISTMAS

BABCHRISTMASBONATALLEFATHER

output

NO

Note

In the first sample the letters written in the last line can be used to write the names and there won't be any extra letters left.

In the second sample letter "P" is missing from the pile and there's an extra letter "L".

In the third sample there's an extra letter "L".

Problem 19:

Igor K. always used to trust his favorite Kashpirovsky Antivirus. That is why he didn't hesitate to download the link one of his group mates sent him via QIP Infinium. The link was said to contain "some real funny stuff about swine influenza". The antivirus had no objections and Igor K. run the flash application he had downloaded. Immediately his QIP Infinium said: "invalid login/password".

Igor K. entered the ISQ from his additional account and looked at the info of his main one. His name and surname changed to "H1N1" and "Infected" correspondingly, and the "Additional Information" field contained a strange-looking binary code 80 characters in length, consisting of zeroes and ones. "I've been hacked" — thought Igor K. and run the Internet Exploiter browser to quickly type his favorite search engine's address.

Soon he learned that it really was a virus that changed ISQ users' passwords. Fortunately, he soon found out that the binary code was actually the encrypted password where each group of 10 characters stood for one decimal digit. Accordingly, the original password consisted of 8 decimal digits.

Help Igor K. restore his ISQ account by the encrypted password and encryption specification.

Input

The input data contains 11 lines. The first line represents the binary code 80 characters in length. That is the code written in Igor K.'s ISQ account's info. Next 10 lines contain pairwise distinct binary codes 10 characters in length, corresponding to numbers 0, 1, ..., 9.

Output

Print one line containing 8 characters — The password to Igor K.'s ISQ account. It is guaranteed that the solution exists.

---

input

01001100100101100000010110001001011001000101100110010110

10000101101010010110 1100

0100110000

0100110010

0101100000

0101100010

0101100100

0101100110

0101101000

0101101010

0101101100

0101101110

output

12345678

input

10101101111001000010100100011010101101110010110111011000

10001101111001011000100 0

1001000010

1101111001

1001000110

1010110111

0010110111

1101001101

1011000001

1110010101

1011011000

0110001000

output

30234919

Problem 20:

In a far away kingdom lived the King, the Prince, the Shoemaker, the Dressmaker and many other citizens. They lived happily until great trouble came into the Kingdom. The ACMers settled there.

Most damage those strange creatures inflicted upon the kingdom was that they loved high precision numbers. As a result, the Kingdom healers had already had three appointments with the merchants who were asked to sell, say, exactly 0.273549107 beer barrels. To deal with the problem somehow, the King issued an order obliging rounding up all numbers to the closest integer to simplify calculations. Specifically, the order went like this:

If a number's integer part does not end with digit 9 and its fractional part is strictly less than 0.5, then the rounded up number coincides with the number’s integer part.

If a number's integer part does not end with digit 9 and its fractional part is not less than 0.5, the rounded up number is obtained if we add 1 to the last digit of the number’s integer part.

If the number’s integer part ends with digit 9, to round up the numbers one should go to Our friend the Wise. In the whole Kingdom she is the only one who can perform the tricky operation of carrying into the next position.

Merchants found the algorithm very sophisticated and they asked you (the ACMers) to help them. Can you write a program that would perform the rounding according to the King’s order?

Input

The first line contains a single number to round up — the integer part (a non-empty set of decimal digits that do not start with 0 — with the exception of a case when the set consists of a single digit — in this case 0 can go first), then follows character «.» (a dot), and then follows the fractional part (any non-empty set of decimal digits). The number's length does not exceed 1000 characters, including the dot. There are no other characters in the input data.

Output

If the last number of the integer part is not equal to 9, print the rounded-up number without leading zeroes. Otherwise, print the message "GOTO Vasilisa." (without the quotes).

---

input

0.0

output

0

input

1.49

output

1

input

1.50

output

2

input

2.718281828459045235 36

output

3

input

3.14159265358979323846

output

3

input

12345678901234567890.1

output

12345678901234567890

input

123456789123456789.999

output

GOTO Vasilisa.