Freshman Qualifier 1 Round 1

Problem A: Word Capitalization

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

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.

Test Cases

input	**output**
ApPLe	ApPLe

input	**output**
konjac	Konjac

Problem B: Boy or Girl

Those days, many boys use beautiful girls' photos as avatars in forums. So it is pretty hard to tell the gender of a user at the first glance. Last year, Nakash went to a forum and had a nice chat with a beauty (he thought so). After that they talked very often and eventually they became a couple in the network.
But yesterday, he came to see "her" in the real world and found out "she" is actually a very strong man! Nakash is very sad and he is too tired to love again now. So he came up with a way to recognize users' genders by their user names.
This is his method: if the number of distinct characters in one's user name is odd, then he is a male, otherwise she is a female. You are given the string that denotes the user name, please help Nakash to determine the gender of this user by his method.

Input

The first line contains a non-empty string, that contains only lowercase English letters — the user name. This string contains at most 100 letters.

Output

If it is a female by Nakash's method, print "CHAT WITH HER!" (without the quotes), otherwise, print "IGNORE HIM!" (without the quotes).

Test Cases

input	**output**
wjmzbmr	CHAT WITH HER!

input	**output**
xiaodao	IGNORE HIM!

input	**output**
sevenkplus	CHAT WITH HER!

Note

For the first example. There are 6 distinct characters in "wjmzbmr". These characters are: "w", "j", "m", "z", "b", "r". So wjmzbmr is a female and you should print "CHAT WITH HER!".

Problem C: Keyboard

Our good friend Bilal is trying to code a big message. He is typing on an unusual keyboard with characters arranged in following way:
qwertyuiop
asdfghjkl;
zxcvbnm,./
Unfortunately Bilal is very weak in sight, so sometimes it is problem for him to put his hands accurately. He accidentally moved both his hands with one position to the left or to the right. That means that now he presses not a button he wants, but one neighboring button (left or right, as specified in input).
We have a sequence of characters he has typed and we want to find the original message.

Input

First line of the input contains one letter describing direction of shifting ('L' or 'R' respectively for left or right).
Second line contains a sequence of characters written by Bilal. The size of this sequence will be no more than 100. Sequence contains only symbols that appear on Bilal's keyboard. It doesn't contain spaces as there is no space on Bilal's keyboard.
It is guaranteed that even though Bilal's hands are moved, he is still pressing buttons on keyboard and not hitting outside it.

Output

Print a line that contains the original message.

Test Cases

input	output
R s;;upimrrfod;pbr	allyouneedislove

Problem D: Saad and Equation

Our coder's cup head Saad misbehaved during a math lesson a lot and the nasty teacher Mr. Pickles gave him the following problem as a punishment.
Find all integer solutions x ($0 < x < 10^9$) of the equation:

$$x = bs(x)^a + c,$$

where a, b, c are some predetermined constant values and function s(x) determines the sum of all digits in the decimal representation of number x.
The teacher gives this problem to Saad for each lesson. He changes only the parameters of the equation: a, b, c. Saad got sick of getting bad marks and he asks you to help him solve this challenging problem.

Input

The first line contains three space-separated integers: a, b, c ($1 <= a <= 5; 1 <= b <= 10000; -10000 <= c <= 10000$).

Output

Print integer n — the number of the solutions that you've found. Next print n integers in the increasing order — the solutions of the given equation. Print only integer solutions that are larger than zero and strictly less than 109.

Test Cases

input	**output**
3 2 8	3 10 2008 13726

input	**output**
1 2 -18	0

input	**output**
2 2 -1	4 1 31 337 967

Problem E: Text Document Analysis

Modern text editors usually show some information regarding the document being edited. For example, the number of words, the number of pages, or the number of characters.
In this problem you should implement the similar functionality.
You are given a string which only consists of:

- uppercase and lowercase English letters,
- underscore symbols (they are used as separators),
- parentheses (both opening and closing).

It is guaranteed that each opening parenthesis has a succeeding closing parenthesis. Similarly, each closing parentheses has a preceding opening parentheses matching it. For each pair of matching parentheses there are no other parenthesis between them. In other words, each parenthesis in the string belongs to a matching "opening-closing" pair, and such pairs can't be nested.
For example, the following string is valid: "_Hello_Vasya(and_Petya)__bye_(and_OK)".
Word is a maximal sequence of consecutive letters, i.e. such sequence that the first character to the left and the first character to the right of it is an underscore, a parenthesis, or it just does not exist. For example, the string above consists of seven words: "Hello", "Vasya", "and", "Petya", "bye", "and" and "OK". Write a program that finds:

- the length of the longest word outside the parentheses (print 0, if there is no word outside the parentheses),
- the number of words inside the parentheses (print 0, if there is no word inside the parentheses).

Input

The first line of the input contains a single integer n (<= n <= 255) — the length of the given string. The second line contains the string consisting of only lowercase and uppercase English letters, parentheses and underscore symbols.

Output

Print two space-separated integers:

- the length of the longest word outside the parentheses (print 0, if there is no word outside the parentheses),
- the number of words inside the parentheses (print 0, if there is no word inside the parentheses).

Test Cases

input	output
37 _Hello_Vasya(and_Petya)__bye_(and_OK)	5 4

input	output
37 _a_(_b___c)__de_f(g_)__h__i(j_k_l)m__	2 6

input	output
5 (___)	0 0

Note

In the first sample, the words "Hello", "Vasya" and "bye" are outside any of the parentheses, and the words "and", "Petya", "and" and "OK" are inside. Note, that the word "and" is given twice and you should count it twice in the answer.