

Problem A. Power3

Input file: standard input
Output file: standard output
Time limit: 2 seconds
Memory limit: 64 megabytes

Find all number between A and B which is the power of 3 and has only 4 digits. Print them in descending order.

Input

Two numbers: A and B, where $B > A$.

Output

List of numbers.

Example

standard input	standard output
1 1000000	6561 2187

Problem B. Anagram

Input file: `standard input`
Output file: `standard output`
Time limit: 2 seconds
Memory limit: 64 megabytes

Given string *S* and a list of words *L*. Each word from *L* and *S* contains only letters from 'a' to 'z'. Erase all anagrams of *S* and duplicates from the list. The word is an anagram of another word, if it can be obtained by rearrangement of its letters. Print remaining words from the list in ascending order in one line separated by space.

Input

List of words.

Output

List of words.

Examples

standard input	standard output
abc abcd abc cba bca	abcd
given two words on separate lines	lines on separate two words

Problem C. Zipping

Input file: `standard input`
Output file: `standard output`
Time limit: 2 seconds
Memory limit: 64 megabytes

Given a list of numbers. Move all zeros to the end. Other non-zero numbers should be placed as in origin order. Print modified list.

Input

List of numbers

Output

List of numbers

Example

standard input	standard output
4 0 5 0 3 0 0 5	4 5 3 5 0 0 0 0

Problem D. Set

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 64 megabytes

Given list of words. Each word contains only letters from 'a' to 'z'. Erase all palindromes and duplicates from text. Print words from text in ascending order in separate lines.

Input

List of words.

Output

List of words.

Examples

standard input	standard output
a abc aba bbbc dcd asfd	abc asfd bbbc
abba aba aa word	word

Problem E. !Prime

Input file: `standard input`
Output file: `standard output`
Time limit: 2 seconds
Memory limit: 64 megabytes

Given a list of numbers. Print all not prime numbers which is appeared in the list more than once in ascending order.

Input

List of numbers.

Output

List of numbers.

Example

standard input	standard output
1 2 3 4 5 6 6 7 8 2 3 3 4 5 6 7	4 6

Problem F. Primes

Input file: standard input
Output file: standard output
Time limit: 2 seconds
Memory limit: 64 megabytes

Given a list of numbers. Erase all duplicates and number which is a power of 2. Print remaining numbers in ascending order.

Input

List of numbers.

Output

List of numbers.

Example

standard input	standard output
1 42 1 82 90 1024 43 6 1 32 1	6 42 43 82 90

Problem G. Letters

Input file: standard input
Output file: standard output
Time limit: 2 seconds
Memory limit: 64 megabytes

Given text. Find how many words started by letters: 'a', 'b', 'c' ... 'z'. Note: 'a' and 'A' must be considered as same letters.

Input

Text.

Output

26 lines with numbers.

Example

standard input	standard output
Machine code was the language of	0
early programs, written in the	1
instruction set of the particular	1
machine, often in binary notation.	0
	1
	0
	0
	0
	3
	0
	0
	1
	2
	1
	3
	2
	0
	0
	1
	3
	0
	0
	2
	0
	0
	0

Problem H. Exam

Input file: `standard input`
Output file: `standard output`
Time limit: 2 seconds
Memory limit: 64 megabytes

Given pairs of string and int. Where string is name of the student and int is his score for programming exam. One student can pass exam several times. Find best result for each student and print them in ascending order by name.

Input

List of pairs.

Output

List of pairs.

Example

standard input	standard output
A 12	A 30
A 20	B 2
C 10	C 23
A 30	
B 2	
B 1	
C 23	
B 1	

Problem I. Words

Input file: standard input
Output file: standard output
Time limit: 2 seconds
Memory limit: 64 megabytes

Given a list of words. Print how many time each word is appeared in the list.

Input

List of words.

Output

List of words with number of appearing in the text for each word in separate line.

Examples

standard input	standard output
the name signifies the evolutionary nature of the changes from c	c 1 changes 1 evolutionary 1 from 1 name 1 nature 1 of 1 signifies 1 the 3
as of 2017 c++ remains the third most popular programming language behind java and c	2017 1 and 1 as 1 behind 1 c 1 c++ 1 java 1 language 1 most 1 of 1 popular 1 programming 1 remains 1 the 1 third 1

Problem J. Primes

Input file: standard input
Output file: standard output
Time limit: 2 seconds
Memory limit: 64 megabytes

Print all prime numbers between A and B in descending order.

Input

Two integer numbers: A and B. Where $A < B$.

Output

List of primes.

Examples

standard input	standard output
2 100	97 89 83 79 73 71 67 61 59 53 47 43 41 37 31 29 23 19 17 13 11 7 5 3 2
1 20	19 17 13 11 7 5 3 2

Problem K. Power

Input file: `standard input`
Output file: `standard output`
Time limit: 2 seconds
Memory limit: 64 megabytes

Given a list of numbers. Find unique numbers which is a power of 2. Print them in ascending order.

Input

List of numbers.

Output

List of numbers.

Example

standard input	standard output
2 4 6 1	1 2 4

Problem L. Coolest row

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 256 megabytes

Given matrix $N \times M$. Find row with biggest sum of numbers on it. If there is multiple solution print **smallest** one. Rows are numbered from 1 to N .

Input

First line contains two numbers N and M ($1 \leq N, M \leq 100$) — number of rows and number of columns, respectively. Each of the next N lines contains M integer numbers $a_{i,j}$ ($1 \leq a_{i,j} \leq 10$) — number at i -th row and j -th column.

Output

Print one number — answer to the problem.

Examples

standard input	standard output
2 2 5 6 1 2	1
2 3 1 2 3 1 4 1	1
4 5 1 2 2 2 2 4 2 3 1 4 10 4 1 1 1 9 5 1 1 1	3

Problem M. Alphabet

Input file: `standard input`
Output file: `standard output`
Time limit: 1 second
Memory limit: 256 megabytes

Given string S . For each letter print number of appearances in given string.

Input

One line of input contains one string S ($1 \leq |S| \leq 100$) — given string, contains only lowercase english alphabet.

Output

On first line print K — number of different letters. On next K lines print: *Letter Number_of_appearances*. Letters must be printed in alphabetically order.

Examples

standard input	standard output
a	1 a 1
abacaba	3 a 4 b 2 c 1

Problem N. Anagram

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 64 megabytes

The word is an anagram of another word, if it can be obtained by rearrangement of its letters.

Input

Given two words on separate lines. Words are consist of lowercase letters and digits. Lengths of each word is not more than 255.

Output

Your task is to output "YES"if one word is anagram of other and "NO"otherwise.

Example

standard input	standard output
sharm marsh	YES

Problem O. Most recent word

Input file: standard input
Output file: standard output
Time limit: 2 seconds
Memory limit: 64 megabytes

Write a program that will find and return most recent word in the given text. Your program have to be not case-sensitive(ignore case - "Can"and "CAN"are the same words) Also note than WORD is sequence of letters seperated by whitespace.

Input

First line contains one line that is not longer than 1000 symbols with whitespace.

Output

The most recent word in UPPER case.

Examples

standard input	standard output
Can you can the can with can	CAN
Buffalo buffalo Buffalo buffalo buffalo buffalo Buffalo buffalo	BUFFALO

Problem P. 73929. Distance in an array

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 256 megabytes

In this task you have to generate a two dimensional array of n rows and n columns.

Each cell's value is to be set by its distance from the cell (1,1). Distance from one cell to another is defined by the minimum number of crossings between cells that share a side in some path between given two cells. For clearance, discover the given test cases.

Input

Single line contains an integer n — size of the two dimensional array ($1 \leq n \leq 100$).

Output

Output n lines each containing n space separated integers — two dimensional array.

Examples

standard input	standard output
4	0 1 2 3 1 2 3 4 2 3 4 5 3 4 5 6
6	0 1 2 3 4 5 1 2 3 4 5 6 2 3 4 5 6 7 3 4 5 6 7 8 4 5 6 7 8 9 5 6 7 8 9 10

Problem Q. 73511. Quarters

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 256 megabytes

In this task, you have to generate a two-dimensional array of n rows and m columns in the following way. Let's pass two lines through our two-dimensional array horizontally and vertically, both cutting the array in the middle. Formally, these are the horizontal line after $\frac{n}{2}$ -th row and the vertical line after $\frac{m}{2}$ -th column (n and m are even).

Now we have four parts of the array: right-upper quarter, left-upper quarter, left-lower quarter and right-lower quarter. Fill the right-upper quarter with 0-s, the left-upper quarter with 1-s, the left-lower quarter with 2-s, the right-lower quarter with 3-s. For clearance, see the examples below.

Input

The first line of input contains two-separated positive even integers n and m — the number of rows and columns respectively ($2 \leq n, m \leq 100$).

Output

Output n lines each containing m space-separated integers — the generated array with each cell having the number of corresponding quarter.

Examples

standard input	standard output
4 6	1 1 1 0 0 0 1 1 1 0 0 0 2 2 2 3 3 3 2 2 2 3 3 3
2 6	1 1 1 0 0 0 2 2 2 3 3 3
8 8	1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 1 1 1 1 0 0 0 0 2 2 2 2 3 3 3 3 2 2 2 2 3 3 3 3 2 2 2 2 3 3 3 3 2 2 2 2 3 3 3 3
4 2	1 0 1 0 2 3 2 3

Problem R. 73314. Shift+delete

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 256 megabytes

Have you ever tried to create your own language? Akerke, another hero of our legends, states that it is very simple! She just picks up one letter of the Latin alphabet and never uses that letter anymore. That is the way how she comes up with a new language.

Now, when her language has become very popular among her friends, she decided to make a translator. As she is not a programmer, she dared to ask for your help in this. The translator should get a string, delete all occurrences of some letter and output the modified string.

Can you help Akerke in creating a translator?

Input

The first line of input contains a single lowercase Latin letter c — letter that is never used in Akerke's language.

The second line of input contains string s — a word in a normal language that is going to be translated to Akerke's new language. Given word consists of only lowercase Latin letters.

It is guaranteed that the letter c appears in s at least once and there are other letters than c in s .

Output

Output a string in a single line — string s , from which all occurrences of letter c are deleted.

Examples

standard input	standard output
i elimination	elmnaton
a amplification	mplifiction

Problem S. 73583. Binarization

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 256 megabytes

Let's define *binarization* as an operation on an array of integers. *Binarization* takes all of the greatest elements of an array and replaces them with 1-s, and all the other elements with 0-s.

In this task, you are challenged to make *binarization* on a given array of integers.

Input

The first line of input contains single integer n — the size of the array ($1 \leq n \leq 1000$).

The second line contains n space-separated integers a_1, a_2, \dots, a_n — given array ($0 \leq a_i \leq 1000$).

Output

Output n space-separated integers — an array obtained array from the original array after its binarization.

Example

standard input	standard output
5 2 1 3 2 3	0 0 1 0 1

Problem T. 73369. Equation

Input file: `standard input`
Output file: `standard output`
Time limit: 1 second
Memory limit: 256 megabytes

Solve the following equation:

$$ax - b = cx + d$$

It is guaranteed that the equation has exactly one integer value solution with given parameters.

Input

In a single line given four space-separated integers a b c d — parameters from the above equation ($-1000 \leq a, b, c, d \leq 1000$).

Output

Output x — solution to the equation.

Example

standard input	standard output
2 1 1 1	2

Problem U. 73942. The Crazy Frog

Input file: `standard input`
Output file: `standard output`
Time limit: 1 second
Memory limit: 256 megabytes

Once upon a time, the Crazy Frog encounters a tree with h meters height while he was escaping from his enemy robot. He decides to climb up the tree to fool the robot. But as we know, the Crazy Frog's energy is not infinite. In the morning he can climb a meters up, but by the evening he falls b meters down. Of course, if the Crazy Frog is already on top of the tree, he stays there.

Can you calculate how many days it takes the Crazy Frog to climb up to the top of the tree?

Input

In a single line given three space separated integers h, a, b — height of the tree, amount by which the Crazy Frog climbs up and down every morning and evening respectively ($1 \leq h \leq 1000, 1 \leq b < a \leq 100$).

Output

Output a single integer in a single line — number of days needed to climb up to the top of the tree.

Examples

standard input	standard output
10 5 3	4
5 4 1	2

Problem V. K-th common divisor

Input file: `standard input`
Output file: `standard output`
Time limit: 1 second
Memory limit: 256 megabytes

You are given positive integers **A** and **B**.

Find the **K-th** largest positive integer that divides both **A** and **B**.

The input guarantees that there exists such a number.

Input

You are given **A**, **B**, **K** respectively.

Output

Print the **K-th** largest positive integer that divides both **A** and **B**.

Examples

standard input	standard output
8 12 2	2
100 50 4	5
1 1 1	1

Note

Common divisors of (8, 12) are [1, 2, 4], so 2nd largest common divisor is 2

Problem W. Can't Wait for Holiday

Input file: `standard input`
Output file: `standard output`
Time limit: 1 second
Memory limit: 256 megabytes

Given is a string **S** representing the day of the week today.

S is SUN, MON, TUE, WED, THU, FRI, or SAT, for Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday, respectively.

After how many days is the next Sunday (tomorrow or later)?

Output

Print the number of days before the next Sunday.

Examples

standard input	standard output
SAT	1
SUN	7

Problem X. Who is the best?

Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 256 megabytes

You are given list of students name and their points. Askar Agay wants to find out who scored the most points by percentage. Askar Agay is busy with the NEERC final, he asks you to help him.

Input

You are given list of students name, and points student earned.

Output

Print students name and by points scored as a percentage of total points in descending order.

Examples

standard input	standard output
10 Nurzhan 30 Gaziz 20 Aldiyar 25 Mikhail 10 Ali 10 Mikhail 5 Nurzhan 5 Temur 28 Gaziz 2 Aldiyar 5	Nurzhan 25% Aldiyar 21.4286% Temur 20% Gaziz 15.7143% Mikhail 10.7143% Ali 7.14286%
5 Aspan 10 Aykhan 20 Bekbolat 10 Aspan 35 Bekbolat 30	Aspan 42.8571% Bekbolat 38.0952% Aykhan 19.0476%

Problem Y. Great seven

Input file: `standard input`
Output file: `standard output`
Time limit: 1 second
Memory limit: 256 megabytes

Everybody loves seven, so convert decimal(base 10) to base 7.

Input

You are given integer number `n` presented in base 10 notation, convert it to base 7.

Output

print `n` in base 7 representation.

Examples

standard input	standard output
12	15
8	11
14	20

Note

If your solution is not through the function then 0 points