Problem A. 190087. Asmay.

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

Asman has always loved jumping. And so he thought, what if you jump over the array? And he had an idea for a problem. You are given an integer array. You are initially located at the 1 element in array, and each element represents your maximum jump length at that position.

Input

You are given an integer array.
$1 <= array.size() <= 10^3$.
$0 <= array[i] <= 10^4$.

Output

Print 1 if you can reach the last index, or 0 otherwise.

Examples

standard input	standard output
2 3 1 1 4	1
3 2 1 0 4	0
2 3 0 1 3 4 1 5 8 0 56 3 1	1

Problem B. 187378. Maximum product of two elements.

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

You are given an integer array. Print the maximum product of any two elements in the array.

Input

The number of elements in the array - $n(2 \leq n \leq 500)$ and array $a(1 \leq a_i \leq 100)$.

Output

Integer number - the maximum product of any two elements.

Examples

standard input	standard output
4 5 2 1 7	35
7 9 4 7 4 8 9 10	90
2 4 8	32

Note

In the first example, the maximum product is 35 because if we multiply 5(0th) and 7(3rd) elements of the array we will get 35.

Problem C. 187698. Diagonal x.

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

You are given int n the size of table, you have to create multiplication table and output diagonal x*y

Input

Input integer N where $1 \leq N \leq 99$.

Output

Output 2d-array where 1 row and column iterated to N and diagonal are result of multiplication

Example

standard input	standard output
5	0 1 2 3 4
	1 1 0 0 0
	2 0 4 0 0
	3 0 0 9 0
	4 0 0 0 16

Note

Index starts from 0

Problem D. 188131. Tsunami.

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

Scientists have reported that an earthquake in the sea will soon occur near Paradis Island. This could trigger a large tsunami that could damage the island. However, we know that if the tsunami height is an even number, then it should go in the opposite direction, towards Marley. Draw tsunami moving in the desired direction.

Input

You are given integer N - the height of tsunami.

Output

Draw the tsunami.

Examples

standard input	standard output

5	`....#`
	`...##`
	`..###`
	`.####`
	`#####`

6	`#.....`
	`##....`
	`###...`
	`####..`
	`#####.`
	`######`

Problem E. 187639. XOR in an array.

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

You're given 2 integer numbers `n` and `x`. For solving this problem you need to create array `arr` where `arr[i] = x + 2*i` and the size of array is equal to given `n`. Remember that array starts from 0. Print the bitwise XOR of all elements of the array `arr`.

Input

Two integer numbers $n(1 \leq n \leq 10^3)$, $x(0 \leq x \leq 10^3)$.

Output

Print the single integer - XOR of all items of the `arr`.

Examples

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

Note

In the first example, array `arr` is equal to [3, 5, 7, 9], answer = (3 ^ 5 ^ 7 ^ 9) = 8.

Problem F. 196670. Compensations.

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

Due to the end of finals, KBTU administration decided to give every student whose GPA is greater than 3.5 some compensation. But the accounting department messed up a little bit, so they have payed the compensation more than once to some students. Also the amount of the compensations were different.

But they decided to show their kindness, and they need your help. You should find the students(-s) who received maximum compensation, and for every other students you need to calculate the amount of money they have to receive so that in total they received the same amount as the student(-s) who was/were paid the most.

Input

The first line contains an integer n, the number of payments made by accounting department $(1 \leq n \leq 10^5)$. Each of the next n line contains a student's surname s_i and the amount of payment he/she received x_i $(1 \leq |s_i| \leq 100, 1 \leq x_i \leq 10^4)$.

Output

You should print the students' surnames in alphabetical and the amount of money they have to receive to equalize all the compensations across students. If the student already received maximum compensation across all students, print "<STUDENT_SURNAME> is lucky!".

Examples

standard input	standard output
6 era 100 era 500 pes 900 era 34 asman 5000 pes 10000	asman has to receive 5900 tenge era has to receive 10266 tenge pes is lucky!
5 LongSurname 10000 VeryLongSurname 7000 SomeOtherSurname 5000 LongSurname 10000 SomeOtherSurname 4000	LongSurname is lucky! SomeOtherSurname has to receive 11000 tenge VeryLongSurname has to receive 13000 tenge
3 SomeSurname 3000 SomeOtherSurname 8000 SomeSurname 5000	SomeOtherSurname is lucky! SomeSurname is lucky!

Problem G. Demon slayer

Input file:	standard input
Output file:	standard output
Time limit:	2 seconds
Memory limit:	256 megabytes

The Demon Hunters went into battle. Several demons are in front of them. Every demon hunter can kill the k demons, with a demon that has a weakness for the ability of the hunter. A demon with water weakness can be killed by a hunter with water abilities. But demon cannot be killed by a hunter who, for example, has the ability to flame.

How many demons will survive after the battle?

Input

First line integer n - amount of demons($1 \le n \le 10000$).

Next n lines consist of strings d and w - demon name and demon weakness.

Next line integer m - amount of hunters($1 \le m \le 10000$).

Next m lines consist of strings h, a and integer k - hunter name, ability, the number of demons a hunter can kill

Output

Print - Demons left: and number of remaining demons

Examples

standard input	standard output
5 akaza water zenitsu_brother thunder Susamaru water Spider_demon_father water Spider_demon_son sun 3 tanjiro water 10 zenitsu thunder 1 giyuu water 11	Demons left: 1
5 Muzan sun Spider_Sister insect Gyokko fog Akaza flame Gyokko_2 fog 3 Muichiro fog 1 Rengoku flame 100000 Shinobu insect 500	Demons left: 2

Problem H. Closest point

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

You are given single point P in x,y coordinates system, and also list of **n** points.

You have to sort points by closest point to P.

Closest point - Ближайшая точка.

Input

In the first line given **x, y** coordinates of point P.

In the second line given **n**, number of points.

In the next **n** lines given x,y coordinates of each points.

Output

Print the array after sorting by closest point to P.

Examples

standard input	standard output
0 0 5 5 5 2 10 1 2 2 2 3 3	1 2 2 2 3 3 5 5 2 10
5 5 5 2 10 3 4 2 1 3 3 6 6	6 6 3 4 3 3 2 1 2 10
4 3 3 3 3 1 2 2 1	3 3 2 1 1 2

Note

Distance between two points determine by $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

Problem I. 77244. Discs.

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

Akniet lost her cartoon discs. Her brother Askat bought many discs and put those discs to her shelf. He can put discs to the shelf or take at the shelf. Operations are described by a pair of numbers. Number 1 mean - putting to the end of the shelf and after followed the name of the disc, 2 - taking from the begin of the shelf. There is a guarantee that we invoke the second operation if the shelf isn't empty. At the beginning the shelf is empty. Your task is to find what discs Askat took.

Input

You are given N integer number, then N, $(1 \leq N \leq 10^2)$ operations that Askat performed.

Output

Print the name of discs that Askat took to each second operation.

Examples

standard input	standard output
5 1 discovery 1 TomandJerry 2 1 comedy 2	discovery TomandJerry
2 1 disney 2	disney

Problem J. 195834. Boris and Passwords.

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

Boris is still working on his website. This time he decided to check all the passwords that his users use. Boris believes that a password is considered strong if it contains uppercase, lowercase letters and numbers. Write a program that will find unique strong passwords.

Input

First line contains integer N, $(1 \leq N \leq 10^3)$ - number of passwords. Next N lines contain passwords.

Output

In the first line print total number of strong passwords. Then, print on separate lines all strong unique passwords in sorted order.

Examples

standard input	standard output
5 KotletaBoris001 Romawka5 burger WATER Romawka5	2 KotletaBoris001 Romawka5
7 qwerty qwerty11 QwErTy1 tSarka9 tSarka qwerty11 tsarkA1	3 QwErTy1 tSarka9 tsarkA1

Note

In the first example, the *KotletaBoris*001 password has uppercase, lowercase letters and numbers, so it is strong.

Problem K. 195846. Final essay.

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

Students wrote an essay on the final exam in Philosophy. The teacher wants to count how many unique words there are in the essay. Help him write such a program.

Input

You are given a set of words in one line - a student's essay.

Output

In the first line print number of unique words. Then, print each unique word in separated line sorted lexicographically.

Example

standard input	standard output
Hello, Boris! How are you?	5 Boris Hello How are you

Note

Punctuation marks should not be counted. Uppercase and lowercase letters differ. For example, $boris \neq Boris$, so both of them are unique.

Also remember, lexicographically lower case letters greater that that upper case letters. For example a and b are greater that A in lexicographically order

Problem L. 194034. Open Closed.

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

Help Eva with the task. A finite sequence consisting of left and right brackets of various specified types:

$\{,(,[,\},)$ and $]$

is given. It is necessary to determine whether it is possible to add numbers and signs of arithmetic operations to it so that the correct arithmetic expression is obtained.

Input

Input string S, $(1 \le |S| \le 10^8)$.

Output

Output answer Yes or No.

Examples

standard input	standard output
[(([	No
[]	Yes

Problem M. 197032. Important dates.

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

Professor of History during the lecture says a lot of important dates, but they come in random-like order. You should listen for all the dates the professor says, and then sort them to restore the chronological order of the events.

Input

You are given some amount of dates (not more than 10^5 and in in the format "`dd mm yyyy`") each on next line. After the last date comes symbol "`0`". It is guaranteed that each date is valid.

Output

Print the dates in the chronological order in the format "`dd mm yyyy`".

Examples

standard input	standard output
11 09 0201 08 05 1945 23 10 1953 07 01 0001 12 12 2021 22 06 1941 21 12 2012 0	07 01 0001 11 09 0201 22 06 1941 08 05 1945 23 10 1953 21 12 2012 12 12 2021
31 12 2000 01 10 1852 30 09 1852 01 01 2001 01 09 1853 0	30 09 1852 01 10 1852 01 09 1853 31 12 2000 01 01 2001
01 02 1900 07 06 2002 12 09 1881 01 01 1970 0	12 09 1881 01 02 1900 01 01 1970 07 06 2002

Problem N. 194739. We got stronger.

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

Game N has a counter system that counts all frags in the game. We are given unknown number of players. Daniil wants to divide them into pairs, according to a simple system. The first in line is combined with the last, the second with the penultimate, and so on. Implement this in your program, use a vector!

Input

Integer in each line. Input ends with the number 0.

Output

Print numbers by the sum of the first and last elements of the original array, the second by the sum of the second and penultimate, etc. if the array has an odd number of elements, the central element does not change.

Examples

standard input	standard output
1 2 3 1 2 3 0	4 4 4
2 5 10 30 40 0	42 35 10

Note

You can use vector.

Problem O. 147221. String calculator.

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

Do you remember calculator problem from the first quiz? Now you need to calculate sum of two numbers, but digits are given as triplet of uppercase English characters. For example `ONETWOSEV` will be equal to 127. And you should print the answer in the same way as given numbers, using triplets of characters. SOLVE BY USING FUNCTIONS!

Input

You're given string s consisting only from uppercase English letters, denoting the expression you need to calculate.

Output

Output result of given expression using triplets of letters.

Examples

standard input	standard output
ONETWOTHR+FOUFIVSIX	FIVSEVNIN
ONETWOTHRFOUFIVSIXSEVEIGNINZER+ZER	ONETWOTHRFOUFIVSIXSEVEIGNINZER
FIVSIX+NINNINNINNIN	ONEZERZERFIVFIV

Note

Solutions without function will be graded zero.

ONE - 1

TWO - 2

THR - 3

FOU - 4

FIV - 5

SIX - 6

SEV - 7

EIG - 8

NIN - 9

ZER - 0