Problem A.

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

To predict person's fate, numerologist takes time of a person's life in seconds,then adds all it's digits together. If that sum of digits is bigger than single digit, the "additional"operation is repeated until it will be a single digit. Then to figure out person's fate numerologist needs a total number of operations needed to convert a number from origin to single digit. Numerologist is not a scientific man,so he is not so good in math. Write a program that will do all the calculations for him.

Input

One number $N - (1 <= N <= 10^{1000})$

Output

Two numbers - first is the single digit number,second total number of operations needed for conversion.

Examples

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

Problem B. Robot

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

Robot is standing at the (0,0) position of the matrix maze. Your task is to find the answer to the question - "Is it possible to find the exit from the given maze?". Exit exists only in case you can find the way from (0,0) to (n-1,m-1) point walking only through blank places(".")

Input

First line that contains N and $M(2 <= n, m <= 6)$. That matrix $N * M$ that contain only '#' and '.', where '#' means wall(robot can not go throught the wall) "."means blank place where robot can walk

Output

Your output have to be contain "YES"if the exit exists and "NO"in other case.

Examples

standard input	standard output
3 3 .#. ..# #..	YES
6 5 ..... ####. ..... .###. ....# ###..	YES

Note

Use recursion or queue for solving this problem.

Problem C. Alphabet

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

You are given string Swhich consist of letter in interval $A..D$. Your task is to find out how often each letter found in the line.

Print only the letters that exists in the given line in the following format: LETTER COUNT for example : (A 1). The letter have to be printed in alpahbet order (A, B, C, D).

Examples

standard input	standard output
AAABBBC	A 3 B 3 C 1
CDD	C 1 D 2

Problem D. Internet

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

In order to access the Internet, each computer is assigned a so-called IP-address. It consists of four integers of range [0, 255] separated by dots. The next three rows show three correct IP-address: 127.0.0.0 192.168.0.01 255.00.255.255

Write a program that determines whether a given string is a valid IP-address.

Input

Input contains a string no longer than 15 characters, which includes numbers and exactly three dots. It is guaranteed that input is given in following format: < integer >.< integer >.< integer >.< integer >

Output

Output 1 if given IP address is valid, or 0 otherwise.

Examples

standard input	standard output
0.0.0.0	1
127.0.0.1	1
256.0.0.1	0
-0.0.0.1	1

Problem E.

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

You given $N * M$ matrix with $N * M$ numbers inside. You task is to find out the row in which total number of positive elements is bigger.

Input

First line contains N and $M(1 <= N, M <= 100)$. Then N lines that contains exactly M numbers each are inputed.

Output

Output have to contain the index of the row in which total number of positive elements is bigger. If in each row we are equal number of positives output "Numbers are equal".

Examples

standard input	standard output
3 4 1 1 -3 1 -4 2 2 1 1 -2 2 1	Numbers are equal
2 3 1 -1 3 2 2 2	2

Note

It's guaranty that only one row at once will have more positive element that others.

Problem F.

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

You given square matrix. Your task is to check if the given matrix is symmetric according to it's main diagonal.

Input

First line $N(1 <= N <= 100)$. Then $N * N$ table is given(all number are from -32768 to 32767)

Output

Output "YES"if matrix is symmetric according to main diagonal or "NO"otherwise.

Examples

standard input	standard output
1 -905	YES
2 5223 27457 -6447 24345	NO
5 6054 1203 1660 -17362 -1769 1203 3486 31609 603 -19022 1660 31609 17721 3453 -6095 -17362 603 3453 2530 6000 -1769 -19022 -6095 6000 -1644	YES

Problem G.

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

Given a sequence of numbers. Find out how many times the maximum element of the sequence meets in the sequence.

Input

First line - n number,total amount of data in array. Then all array is inputed.

Output

The one number representing total times of maximum number appearance in the sequence.

Examples

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

Problem H.

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

Given three natural numbers a, b, c which represent the day, month and year of some date. For example: 1, 4, 1991 represents 1st April 1991. Output three numbers which represent the next day date.

Example

standard input	standard output
1 1 1900	2 1 1900