Problem A. A + B

Input file: `standard input`
Output file: `standard output`

Given a, b, output $a + b$.

Input

The only line of the input contains two space-separated integers a, b ($1 \leq a, b \leq 10^{18}$).

Output

Output $a + b$ in a line.

Examples

standard input	standard output
1 2	3
2019 427	2446

Problem B. Beautiful Numbers

Input file: `standard input`
Output file: `standard output`

We consider a number to be beautiful if it consists only of the digit 1 repeated one or more times. Not all numbers are beautiful, but we can make any base 10 positive integer beautiful by writing it in another base.

Given an integer N, can you find a base B (with $B > 1$) to write it in such that all of its digits become 1? If there are multiple bases that satisfy this property, choose the one that maximizes the number of 1 digits.

Input

One line with an integer N ($3 \leq N \leq 10^{18}$).

Output

Output the answer.

Examples

standard input	standard output
3	2
13	3

Explanation

In case #1, the optimal solution is to write 3 as 11 in base 2.

In case #2, the optimal solution is to write 13 as 111 in base 3. Note that we could also write 13 as 11 in base 12, but neither of those representations has as many 1s.

Problem C. Feeling Lucky?

Input file: `standard input`
Output file: `standard output`

Examples

standard input	standard output
???	YES
??	NO

Note

The contest system is tuned so that you will only get accepted if you are extremely lucky.

Problem D. Guess the Number

Input file: `standard input`
Output file: `standard output`

I am thinking of an integer between -10^9 and 10^9; can you guess what it is? Given a guess, I will tell you whether it is too low, too high, or correct. But you only get 32 guesses per game, so use them wisely!

Interaction Protocol

For each game, your submission should output guesses for the correct number, in the form of an integer between -10^9 and 10^9 on a line on its own.

After each guess, your submission should read a response on standard input. This response is a line with one of the following:

- "small" if your guess is smaller than the number I am thinking of;
- "equal" if you guess is correct; or
- "big" otherwise.

After guessing correctly, you should exit immediately. Within each game, if you guess incorrectly 32 times, you won't get any more chances.

Note: Do not forget to flush output buffers after each write. Use `fflush` in C, `flush` or `endl` in C++, or `sys.stdout.flush()` in Python.

You might get "Idleness Limit Exceeded" as a verdict, which means that your program is waiting for an input that is never arriving.

Examples

standard input	standard output
2 -3 -1 0	 big small small equal

Problem E. Limitations

Input file:	`standard input`
Output file:	`standard output`

Find the time limit and the memory limit of this problem.

Input

The input file is blank.

Output

Output in the first line the time limit in milliseconds; output in the second line the memory limit in megabytes.

Problem F. One in Three

Input file: `standard input`
Output file: `standard output`

You are given an array, with all the numbers appearing at exactly three times, except one number appearing exactly once. Your task is to find this special number.

Input

A line of space-separated randomly-generated unsigned 32-bit integers.

The input file size does not exceed 50 megabytes.

Output

Find the special number.

Examples

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