

Problem A. Banknotes

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

Yernur has n banknotes. His friend Arystan asks him q times how many banknotes he has with value of exactly t . Help Yernur to answer on friend's questions.

Input

The first line of input contains an integer n ($1 \leq n \leq 10^5$). The second line contains n space-separated integers - values of banknotes ($1 \leq a_i \leq 10^9$). The third line contains a single integer q - number of Arystan's queries ($1 \leq q \leq 10^5$). The next q lines contain a single integer t - asked value of banknote.

Output

For each of q query you should output one integer k (number of banknotes with value of exactly t) on a single line.

Example

| standard input | standard output |
|----------------------|-----------------|
| 10 | 4 |
| 1 2 1 2 5 6 1 7 15 1 | 0 |
| 5 | 1 |
| 1 | 2 |
| 13 | 4 |
| 7 | |
| 2 | |
| 1 | |

Note

For the first query answer is 4, because there are 4 banknotes with value 1.
For the second query answer is 0, because there are no banknotes with value 13.
For the third query answer is 1, because there are only one banknote with value 7.
For the fourth query answer is 2, because there are 2 banknotes with value 2.
The last query is the same as the first one.

Problem B. Chess

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

Use Function. You have a chesstable. And coordinates of pieces. if pieces locates in this position print '*', else '0'.

Input

You are given n coordinates. Each line contains string. First letter (A-H) - row, second number (1-8) - column.

Output

chesstable

Example

| standard input | standard output |
|----------------|-----------------|
| 3 | 0000*000 |
| A5 | 00000000 |
| C7 | 000000*0 |
| H1 | 00000000 |
| | 00000000 |
| | 00000000 |
| | 00000000 |
| | *0000000 |

Problem C. Calculator v2.

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

You are given some operator, 2 variables and their value, you have to make calculation using 3 operators +, -, *, /. You have to make pair variable and value. Use FUNCTION `int f1(with some params)` to calculate result.

Input

The first line contains integer N size of operations where $1 \leq N \leq 50$. Second line contains N -times (operator, variable1 and value1, variable2 and value2)

Output

Output must be in this format -> `a + b = 2`

Examples

| standard input | standard output |
|--|---|
| 3 + a 2 b 3 - x 3 y 1 * y 1 z 5 | a + b = 5 x - y = 2 y * z = 5 |
| 1 - e 11 f 13 | e - f = -2 |
| 3 + o 14 l 12 - u 34 i 46 - l 44 h 8 | o + l = 26 u - i = -12 l - h = 36 |

Note

Use functions, STL: map, iterators and etc. else you will get 0.

Problem D. K-bonacci

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

k -bonacci sequence given as follows $a_i = a_{i-2} + k \cdot a_{i-1}$, where $a_1 = 0$ and $a_2 = 1$. You're given numbers k and m . Print the last digit of m -th term of k -bonacci sequence. SOLVE ONLY USING RECURSION!

Input

The only line of the input contains integer numbers k and m ($1 \leq k \leq 10^6$, $1 \leq m \leq 32$).

Output

Print the last digit of m -th term k -bonacci sequence.

Examples

| standard input | standard output |
|----------------|-----------------|
| 1 7 | 8 |
| 1 8 | 3 |
| 2 10 | 5 |
| 1000000 30 | 1 |

Note

Solutions without recursion will be graded zero.

Problem E. Formula

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

All week Temirlan was preparing for the World Programming Championship and forgot to prepare problems for the quiz. And in order not to be late with the deadline, he quickly decided to compose it. However, for a long time he could not come up with a recursion problem. In the end, he decided to give a simple problem. Given a function $F(x)$ = the number of divisors $x + F(\text{the largest divisor of the number } X)$. Where $F(1) = 1$;

Input

Given the number X .

Output

You need to find the number of divisors of the number $X +$ the number of divisors of the maximum divisor of the number X , and so on.

Examples

| standard input | standard output |
|----------------|-----------------|
| 20 | 10 |
| 30 | 12 |

Note

20 have 5 divisor there are 10, 5, 4, 2 and 1.

Problem F. ATTENDANCE AGAIN!

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

Askar agay has a list of his students in PP2.

He decided to take attendance during current practice.

Askar agay has a list of students who are in practice right now.

He wants to find students who missed the practice, as well as students who came to his practice from another group.

Input

In the first line given n - the number of students of Askar agay.

In the second line given list of names of students

In the third line given m - the number of students in current practice.

In the fourth line given list of names of students of current practice.

Output

At first, print students name, who missed practice, line by line.

After, print names of students, who came to practice from another group.

Examples

| standard input | standard output |
|---|--|
| 3 Alik Darkhan Bekbolat 3 Alik Nurbergen Darkhan | Missed students: - Bekbolat Not in the group: - Nurbergen |
| 3 Alima Gulnaz Kyamran Zhenya 4 Gulnaz Alima Dina Meir | Missed students: - Kyamran - Zhenya Not in the group: - Dina - Meir |

Problem G. First big boss

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

There was problem in 18th century to choose boss for organized crime groups, and they decided to choose first boss on the list

Input

The first line contains string *s*

Output

Output first oncoming capital letter, else return -1

Examples

| standard input | standard output |
|----------------|-----------------|
| abcdElHJ | E |
| abcdqwerty | -1 |

Note

Use recursion