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 ($1 \le n \le 10^5$). The second line contains n space-separated integers - values of banknotes ($1 \le a_i \le 10^9$). The third line contains a single integer q - number of Arystan's queries ($1 \le q \le 10^5$). 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 1 2 1 2 5 6 1 7 15 1 5 1 13 7 2 1	4 0 1 2 4

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 A5 C7 H1	0000*000 00000000 000000*0 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

Your 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. HINT: map<string, int>

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
6 + b 37 u 22 - z 9 r 45 + f 21 b 14 * b 29 j 31 * z 10 b 43 - u 19 m 32	b + u = 59 z - r = -36 f + b = 35 b * j = 899 z * b = 430 u - m = -13

Note

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

Problem D. K-bonnaci

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 ($1 \le k \le 10^6$, $1 \le m \le 32$).

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. He quickly decided to compose it. He decided to give a simple problem. Given a function $F(x) = n + F(g)$. Where, x - is the given integer number, n - is the divisors count of x, g - is the largest divisor of the x. For this function, we have one rule: $F(1) = 1$;

Input

You are given one integer number - x.

Output

You need to find the result of the function $F(x) = n + F(g)$.

Examples

standard input	standard output
20	10
30	12

Note

20 have 5 divisors: 10, 5, 4, 2, 1.

F(20) = 5 + F(10) = 5 + (3 + F(5)) = 5 + (3 + (1 + F(1))) = 5 + 3 + 1 + 1 = 10

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 attendace 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 in ascending order, who missed practice, line by line.

After, print names of students in ascending order, 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
4 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