

Exponentiator-2025

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

You are given an array a_1, a_2, \dots, a_n of positive integers. You have an exponentiator machine that can perform the following two-part operation on the array:

1. Shuffle the elements in the array a_1, a_2, \dots, a_n in any order.
2. Replace the array a_1, a_2, \dots, a_n with the array $a_1^{a_2}, a_2^{a_3}, \dots, a_{n-1}^{a_n}$.

Thus, after each operation, the length of the array decreases by one. The exponentiator will apply $n - 1$ operations, after which there will be one element left in the array a . This number is called the result of the exponentiator's work.

It is obvious that the result of the exponentiator's work is not always uniquely defined. To study the properties of the exponentiator, you need to find answers to q questions of the form: can the result of the exponentiator's work be divisible by the number x ?

Input

The first line of input contains two integers n, q ($2 \leq n \leq 2 \cdot 10^5, 1 \leq q \leq 2 \cdot 10^5$) — the length of the array a and the number of queries.

The second line of input contains n integers a_1, a_2, \dots, a_n ($1 \leq a_i \leq 10^6$) — the elements of the array a .

The next q lines contain queries, one per line, each query consists of a single number x ($1 \leq x \leq 10^6$).

Output

For each query, output one line: **Yes** or **No**. If the result of the exponentiator's work can be divisible by x , output **Yes**, otherwise output **No**.

Scoring

The tests for this problem consist of eight groups. Points for each group are awarded only if all tests in the group and all tests in some of the previous groups are passed.

Group	Points	Additional constraints		Required Groups	Comment
		n, q	x		
0	0	—	—	—	Tests from the statement.
1	10	$n = 2$	—	—	—
2	11	$n = 3$	—	—	—
3	12	$n = 4$	—	—	—
4	9	$n \cdot q = 10^6$	x is square-free	—	—
5	12	$n \cdot q = 10^6$	—	4	—
6	16	—	x is square-free	4	—
7	30	—	—	0-6	—

¹A square-free number is a number that is not divisible by the square of any prime number. For example, 6 and 10 are square-free numbers, while 4 (divisible by 2^2) and 18 (divisible by 3^2) are not.

Examples

standard input	standard output
3 2	Yes
2 2 1	No
16	
5	
7 20	Yes
1 2 3 4 5 6 7	Yes
1	Yes
2	Yes
3	Yes
4	Yes
5	Yes
6	Yes
7	Yes
8	No
9	No
10	Yes
11	No
12	No
13	No
14	Yes
15	No
16	Yes
17	No
18	No
19	
20	