The Hangzhou Normal U Qualification Trials for ZJPSC 2020

Prepared by TI1050(Dup4, Hsueh-, lts)

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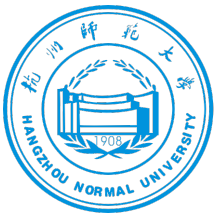

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Do not open before the contest has started.


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1908

Problem A. A simple problem

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

We have learned your team is good at counting problems. So we ask you a simple problem.

Now you have $0-n$ permutation, and you need to connect all the numbers in each permutation to make a new valid number and we define the new valid number as S. It is worth noting that if a certain permutation contains leading zero, the permutaion should be eliminated.

For example if $n = 2$, the set of S will be $102, 120, 201, 210$.

Your task is to count how many S(without leading 0) are divisible by m.

Input

There is a single case.

The first line contains two integers n, $m(1 \leq n \leq 15, 1 \leq m \leq 100)$.

Output

Print a single integer in one line: the number of how many S are divisible by m.

Example

standard input	standard output
2 3	4

Problem B. Hsueh- play balls

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

There are n white balls and m black balls in the box.

Hsueh- randomly takes out a single ball from the box every time until the box is empty.

You need to calculate the probability p of the number of white balls and black balls outside the box is equal at least once in the process.

You need to output answer modulo 998244353. Formally, let $M = 998244353$. It can be shown that the answer can be expressed as an irreducible fraction $\frac{p}{q}$, where p and q are integers and $q \not\equiv 0 \pmod{M}$. Output the integer equal to $p \cdot q^{-1} \bmod M$. In other words, output such an integer x that $0 \le x < M$ and $x \cdot q \equiv p \pmod{M}$.

For instance, we consider $n = 1$ and $m = 3$, and we appointed "`w`" to represent the white ball and "`b`" to represent the black ball.

There are 4 possible outcomes:

- "`wbbb`"
- "`bwbb`"
- "`bbwb`"
- "`bbbw`"

Obviously, two of the results are legal, so the answer should be $\frac{1}{2}$, and we can get $\frac{1}{2} \equiv 499122177 \pmod{998244353}$.

Input

There are several test cases.

The first line contains a single integer $T(1 \le T \le 10^5)$, denoting the number of test cases. Then follow all the test cases.

For each test case, the first line contains two integers $n, m(1 \le n, m \le 10^6)$, representing n white balls and m black balls in box.

Output

For each test case, print a single integer in one line: the probability p of the number of white balls and black balls outside the box is equal at least once in the process.

Examples

standard input	standard output
2 1 1 1 3	1 499122177
1 20 18	893166001

Problem C. Hoogle Machine Translation

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	256 megabytes

This is an interactive problem. You have to use a `flush` *operation right after printing each line. For example, in C++ you should use the function* `fflush(stdout)`*, in Java —* `System.out.flush()`*, in Pascal —* `flush(output)` *and in Python —* `sys.stdout.flush()`*.*

Excellent! pubfso was lucky enough to get a *Hoogle Machine Translation Machine*.

This is the manual of the *Hoogle Machine Translation Machine*:

- If you send a word to the machine, it will return the meaning of the word to you.
- If you send two or more words to the machine, i.e. you send x words to the machine, it will return x explanations to you. Unfortunately, These x explanations and x words do not correspond one-to-one.

  For instance, if we have the correspondence between the following words and explanations:

  - *one* corresponds to 1
  - *two* corresponds to 2
  - *three* corresponds to 3

  If we send $\{one, two, three\}$ to the *Hoogle Machine Translation Machine*.

  We may get the one of the following results:

  - $\{1, 2, 3\}$
  - $\{1, 3, 2\}$
  - $\{2, 1, 3\}$
  - $\{2, 3, 1\}$
  - $\{3, 1, 2\}$
  - $\{3, 2, 1\}$

Now, pubfso has n **different** words need to translate, he wants your help.

Initially, pubfso will give you n words.

You can make queries to the *Hoogle Machine Translation Machine*, Each query is a single line contains $x(1 \le x \le n)$ words which pubfso need to translate. Flush output stream after printing each query. *Hoogle Machine Translation Machine* will return x explanations to you.

Your program is allowed to make no more than 25 queries (not including printing the answer) to the *Hoogle Machine Translation Machine*.

Input

The first line contains a single integer $n(1 \le n \le 10^5)$ denoting the number of words which pubfso need to translate.

In the next line, contains n strings $word_i$, denoting the i th word which need to translate.

It is guaranteed that words and explanations are composed of letters or numbers, and the length does not exceed 10.

Interaction Protocol

When your program ask the meaning of words, i.e. you need to ask $x(x > 0)$ words, print string:

"`?` x $word_1$ $word_2$ $word_3$ $\cdots$ $word_x$"(without quotes).

`What you need to focus on is, the query "? 0" is invalid, and the jury will return` ***`Wrong Answer`*** `to you.`

If your query is legal, the *Hoogle Machine Translation Machine* will return Same number of explanations as words to you. As follows:

$$explanation_1\ explanation_2\ explanation_3\ \cdots\ explanation_x$$

If we answer with -1 instead of a valid answer, that means you exceeded the number of queries or made an invalid query.

Exit immediately after receiving -1 and you will see `wrong answer` verdict. Otherwise, you can get an arbitrary verdict because your solution will continue to read from a closed stream.

When you got the explanation of all the words, you need to print them in order. i.e. print the string:

"`!` $word_1$ $word_2$ $word_3$ $\cdots$ $word_n$"(without quotes).

After printing a query or printing the answer, do not forget to output end of line and flush the output. Otherwise, you will get `idleness limit exceeded`. To do this, use:

- `fflush(stdout)` or `cout.flush()` in C++;
- `System.out.flush()` in Java;
- `flush(output)` in Pascal;
- `stdout.flush()` in Python;
- See the documentation for other languages.

Example

standard input	standard output
3 one two three 1 2 3	? 1 one ? 1 two ? 1 three ! 1 2 3

Problem D. Dup4 and pebble pile

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

Dup4 has a large number of pebbles. He numbered them a through b.

Initially, each pebble forms a pile of its own.

But Dup4 hates so many piles. So he can do the following operation to merge the two piles.

Every time, He chooses two pebbles x and y. If x and y have a *common prime factor* t, and t greater or equal than p. He can merge the pile of pebbles where x is and the pile of pebbles where y is. The premise is that x and y belong to two different piles.

He will repeat the above operations until he can no longer merge.

Finally, Dup4 wants to know how many pebble piles will end up.

For instance, if we consider $a = 10, b = 20, p = 3$, the final result will be:

$$[10, 12, 15, 18, 20], [11], [13], [14], [16], [17], [19]$$

There are 7 piles.

Input

The first line contains three integers $a, b, p (1 \le a \le b \le 10^5, 2 \le p \le b)$.

Output

Print a single integer in one line: the number of pile in the end.

Example

standard input	standard output
10 20 3	7

Problem E. The King Of Sum Xor

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

If you have solved CrossFire #6XX (Div.998244353) D, you will have the potential to become the king of sum xor.

Today Dup4 meets a problem and he asks you for help. He wants to know whether there exists an array n non-negative integers $a_1, a_2, \cdots, a_n$(the array can be empty) that follow these rules.

- $a_1 + a_2 + \cdots + a_n = S$
- $a_1 \oplus a_2 \oplus \cdots \oplus a_n = X$(Here $\oplus$ denotes bitwise xor operation)

However, Dup4 thinks the problem is so easy. He thinks he needs to change something.

1. He constructs all arrays that satisfying the requirements.
2. He defines the maximum value of the i-th array as M_i.
3. He finds the minimum M_i of the all arrays as MIN.
4. He defines a set V to be composed of arrays which satisfying the condition of $M_i = MIN$.

Finally, He wants to know the minimum n(the length of the array) of the V.

Input

There are several test cases.

The first line contains a single integer $T(1 \le T \le 10^2)$, denoting the number of test cases. Then follow all the test cases.

For each test case, the first line contains two integers s, x $(0 \le s, x \le 2^{60} - 1)$.

Output

For each test case, print -1 if there doesn't exist an array with the mentioned property else print your answer.

Example

standard input	standard output
2 9 3 19 1	6 19

Problem F. Hsueh- Love Matrix

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2.5 seconds
Memory limit:	256 megabytes

Hsueh- constructed a matrix of n rows and m columns, the label starts from 1. He makes the element in the i-th row and j-th column $a_{i,j}$ equal to i times j. i.e. $a_{i,j} = i \cdot j$. You need to find the k-th largest element.

Unfortunately, Hsueh- only has ten fingers, so he can't count numbers with more than ten digits. Therefore, if the answer is strictly greater than $9,999,999,999$, just output "`Oops`"(without quotes).

For instance, we consider $n = 2$ and $m = 3$, The matrix elements are as follows:

$$\begin{bmatrix} 1 & 2 & 3 \\ 2 & 4 & 6 \end{bmatrix}$$

- $k = 1$, the answer is 6.
- $k = 2$, the answer is 4.
- $k = 3$, the answer is 3.
- $k = 4$, the answer is 2.
- $k = 5$, the answer is 2.
- $k = 6$, the answer is 1.

Input

There are several test cases.

The first line contains a single integer $T(1 \le T \le 5)$, denoting the number of test cases. Then follow all the test cases.

For each test case, The first line contains three integers $n, m(1 \le n, m \le 10^9)$ and $k(1 \le k \le n \cdot m)$, representing you need to find the k-th largest element in n rows and m columns matrix.

Output

For each test case, output in one line "`Oops`"(without quotes) if the answer strictly greater than $9,999,999,999$, or print a single integer in one line: the k-th largest element of the matrix.

Examples

standard input	standard output
5 1 1 1 2 3 6 3 3 2 1 10 10 100 100 100	1 1 6 1 8722
1 1000000000 1000000000 1	Oops

Problem G. LTS owns large quantities of apples

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

The difference between this problem and ***`Hsueh- owns large quantities of apples`*** *is more than the data range, please read the statement carefully.*

There are n apples in ***`ltslts`***'s bag, and m kids around the man. Let's numbered these children 1 to m. ***`ltslts`*** take all of the apples and gave to the first child.

- The first child got n apples from ***`ltslts`***. Next, he ate an apple and the remaining apples could just be divided into x piles. He took a single pile and gave the remaining $(x-1)$ piles to the second child.
- The second child got $\frac{(n-1)(x-1)}{x}$ apples from the first child. Next, he ate an apple and the remaining apples could just be divided into x piles. He took a single pile and gave the remaining $(x-1)$ piles to the third child.
- $\cdots$
- The i-th child got some apples from the $(i-1)$-th child. Next, he ate an apple and the remaining apples could just be divided into x piles. He took a single pile and gave the remaining $(x-1)$ piles to the $(i+1)$-th child.
- $\cdots$
- The last child got some apples from the Penultimate child, Next, he ate an apple and the remaining apples could just be divided into x piles. He took a single pile and go away.

It should be noted that the number of apples in a pile taken by last child must be a positive integer.

Until the last child go away, Hsueh- wants to know what is a valid n that meets all requirements.

For instance, we consider $m = 2$ and $x = 3$, a valid answer is $n = 7$.

- The first child got 7 apples. Next, he ate an apple and the remaining 6 apples could just be divided into 3 piles and 2 apples per pile. He took a single pile and gave the remaining 2 piles to the second child.
- The second child got 4 apples. Next, he ate an apple and the remaining 3 apples could just be divided into 3 piles and 1 apple per pile. He took a single pile and go away.

Input

The first line contains two integers $m(1 \le m \le 15)$ and $x(2 \le x \le 15)$, denoting the number of children and the number of piles in operation of each child.

Output

For each test case, print a single integer in one line: valid n that meets all requirements.

We can show that an answer less than or equal to 10^{18} always exists. Therefore you should to print a valid n less than or equal to 10^{18}. If there are multiple answers, print any.

Example

standard input	standard output
2 3	7

Problem H. Hsueh- and keyboard

Input file:	`standard input`
Output file:	`standard output`
Time limit:	4 seconds
Memory limit:	512 megabytes

Hsueh- has a keyboard.

There is a string which has x characters in the textarea.

At present, Hsueh- wants to see a string of length exactly n in the textarea.

You can use the following operations to meet Hsueh-'s requirements.

- Strike the keyboard once, enter a character.
- Strike the keyboard twice(Ctrl + A), select all characters in the textarea.
- Strike the keyboard twice(Ctrl + C), copy the selected character to the clipboard.
- Strike the keyboard twice(Ctrl + V), paste the characters which in the clipboard(Do not empty the clipboard).
- Strike the keyboard once(Backspace), delete character at the end of the textarea or delete the selected character if some characters are selected.

Hsueh- wants to know the minimum number of strokes required to see a string of length exactly n in the textarea.

What is different from your traditional perception is, if you press *`Ctrl + A`* to select all characters and then enter a character or paste some characters, the selected characters will not be deleted. In other words, if you select all characters in the textarea and then enter a character or paste some characters, it will not replace the selected characters but append the characters you enter or paste at the end.

Input

The first line contains two integers $x, n (0 \le x \le 10^6, 1 \le n \le 10^6)$, denoting the length of the string which originally appeared in the textarea and the length of the string which Hsueh- wants to see.

Output

Print a single integer in one line: the minimum number of strokes required to see a string of length exactly n in the textarea.

Examples

standard input	standard output
1 4	3
100 199	7

Problem I. LTS and rectangular area union

Input file:	`standard input`
Output file:	`standard output`
Time limit:	4.5 seconds
Memory limit:	256 megabytes

In another parallel world, ***ltslts*** is a fantastic engineer, he build n rectangular rooms, numbered from 1 to n. From a bird's-eye view, the rooms are arranged on a 2-dimensional plane, with axis-aligned. The southern wall of each room has y-coordinate 0.

The i-th rectangular room has southwest corner $(L_i, 0)$ and the northeast corner (R_i, H_i). Since houses often have shared regions (such as a common living/dining area), these rooms may overlap with one another. Due to these houses are built on the mountain, the height of these houses is decreasing.

Specifically, let P_i be the area of the union of rooms $1 \cdots i$. Note that the area of the overlap only needs to be calculated once, and that the union might not form a single connected polygon.

Although ***ltslts*** is a fantastic engineer, his mathematical ability is very poor. Please help compute the product $(P_1 \times P_2 \times P_3 \times \cdots \times P_n)$. As this product may be very large, you need compute its value module 998244353.

Formally, let $M = 998244353$. It can be shown that the answer can be expressed as an irreducible fraction $\frac{p}{q}$, where p and q are integers and $q \not\equiv 0 \pmod{M}$. Output the integer equal to $p \cdot q^{-1} \bmod M$. In other words, output such an integer x that $0 \le x < M$ and $x \cdot q \equiv p \pmod{M}$.

It you don't know what is ***rectangular area union***, you just need to remember, *the area of the overlap only needs to be calculated once.*

For instance, let's consider (L_i, R_i, H_i) to representing a rectangular, if we have two rectangulars $(1, 3, 5)$ and $(2, 4, 5)$, the ***rectangular area union*** is 15, because the area $(2, 3, 5)$ is overlap area, just need to calculate once.

Input

The first line contains a single integer $n(1 \le n \le 10^6)$, denoting the number of rooms.

In the next n lines, each line contains three integers $L_i, R_i, H_i(1 \le L_i, R_i, H_i \le 10^9)$, representing the i-th rectangular.

It is guaranteed that $H_1 \ge H_2 \ge \cdots \ge H_n$ and $L_i < R_i$.

Output

Print a single integer in one line: the product $(P_1 \times P_2 \times P_3 \times \cdots \times P_n)$ module 998244353.

Example

standard input	standard output
2 1 4 5 2 3 5	225

Problem J. Hsueh- owns large quantities of apples

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

The difference between this problem and ***`LTS owns large quantities of apples`*** *is more than the data range, please read the statement carefully.*

There are n apples in Hsueh-'s bag, and m kids around the man. Let's label these children 1 to m.

Hsueh- take all of the apples and gave to the first child.

- The first child got n apples from Hsueh-. Next, he ate an apple and the remaining apples could just be divided into x piles. He took the $x-1$ piles and gave the remaining pile to the second child.
- The second child got $\frac{(n-1)}{x}$ apples from the first child. Next, he ate an apple and the remaining apples could just be divided into x piles. He took the $x-1$ piles and gave the remaining pile to the third child.
- $\cdots$
- The i-th child got some apples from the $(i-1)$-th child. Next, he ate an apple and the remaining apples could just be divided into x piles. He took the $x-1$ piles and gave the remaining pile to the $(i+1)$-th child.
- $\cdots$
- The last child got some apples from the Penultimate child, Next, he ate an apple and the remaining apples could just be divided into x piles. He took $x-1$ piles and go away.

It should be noted that the number of apples in a pile left by last child must be a positive integer.

Until the last child go away, Hsueh- wants to know what is the minimum n that meets all requirements.

Since n can be very large, output n modulo 998244353. Formally, let $M = 998244353$. It can be shown that the answer can be expressed as an irreducible fraction $\frac{p}{q}$, where p and q are integers and $q \not\equiv 0 \pmod{M}$. Output the integer equal to $p \cdot q^{-1} \bmod M$. In other words, output such an integer x that $0 \le x < M$ and $x \cdot q \equiv p \pmod{M}$.

Input

There are several test cases.

The first line contains a single integer $T(1 \le T \le 10^3)$, denoting the number of test cases. Then follow all the test cases.

For each test case, the first line contains two integers $m(1 \le m \le 10^9)$ and $x(2 \le x \le 10^9)$, denoting the number of children and the number of piles in operation of each child.

Output

For each test case, print a single integer in one line: minimum of n modulo 998244353 that meets all requirements.

Example

standard input	standard output
1 1000000000 1000000000	720560972

Problem K. LTS buy wine

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

On a sunny afternoon, *ltslts*' friends came to visit him. So he decided to buy some wine.

All the wine in the store are known to be on the same shelf, these wine are numbered 1 through n from left to right.

ltslts' friends is very wealthy, so *ltslts* will buy all the wine. But his drinking capacity is limited, so he only buys a bottle of wine every day.

As we all konw, the longer the wine, the more valuable it is.

In the first, the i-th bottle of wine has a value v_i. On the t-th day, *ltslts* will buy a bottle of wine on the far left or right side of the shelf, and get the value $v_i \cdot t$.

Obviously, all the wine will be bought by *ltslts* on the n-th day, and he wants to know what the maximum value he could get.

For instance, we consider $n = 5$, and the value of wine are $\{1, 3, 1, 5, 2\}$.

- On the first day, we buy the wine on the far left and got 1 value point, the remaining wine are $\{3, 1, 5, 2\}$.
- On the second day, we buy the wine on the far right and got 4 value point, the remaining wine are $\{3, 1, 5\}$.
- On the third day, we buy the wine on the far left and got 9 value point, the remaining wine are $\{1, 5\}$.
- On the fourth day, we buy the wine on the far left and got 4 value point, the remaining wine are $\{5\}$.
- On the final day, we got 25 value point, and we got a total of 43 value point.

Input

The first line contains a single integer $n(1 \leq n \leq 2000)$, denoting the number of wine.

In the next n lines, each line contains a single integer $v_i(1 \leq v_i \leq 10^9)$ denoting the value of the i-th wine.

Output

Print a single integer in one line: the maximum value *ltslts* could get.

Example

standard input	standard output
5 1 3 1 5 2	43

Problem L. Line problem

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

We have learned your team is good at geometry problems. So we ask you a simple problem.

Now you have two segments in a 2-dimensional plane, you should tell us the length of the intersection of two line segments.

What you need to pay attention to is, if these two line segments intersect at one point, we consider their intersecting length to be 0.

Input

There are several test cases.

The first line contains a single integer $T(1 \leq T \leq 10^3)$, denoting the number of test cases. Then follow all the test cases.

The first line contains four integers x_1, y_1, x_2, $y_2(-10^9 \leq x_1, y_1, x_2, y_2 \leq 10^9)$, representing the two points of the first line segment.

The second line contains four integers x_3, y_3, x_4, $y_4(-10^9 \leq x_3, y_3, x_4, y_4 \leq 10^9)$, representing the two points of the second line segment.

Output

For each test case, print the length of the intersection of two line line segments.

Your answer is considered correct if its absolute or relative error does not exceed 10^{-9}.

Formally, let your answer be a, and the jury's answer be b. Your answer is accepted if and only if $\frac{|a-b|}{\max(1,|b|)} \leq 10^{-9}$.

Example

standard input	standard output
2 0 0 3 3 1 1 2 2 0 0 1 1 1 1 2 2	1.41421356237309514547 0.00000000000000000000

Problem M. Rikka with Random Graph

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2.5 seconds
Memory limit:	512 megabytes

Hello everyone! I am your old friend Rikka. Welcome to Hangzhou Normal U. This is an interesting problem, which is problem about the Graph. I promise you all that this should be `easiest problem` for most people.

A random graph, or a random directed graph, is a graph which edges generated by randomly.

In this problem, we constructed a directed graph by randomly, you need to design a special data structure to support the following operations:

- u v, query weather point u can reach point v through some edges.

If you are ***`Candidate Master`*** or ***`Master`*** or ***`Grandmaster`*** or ***`Legendary Grandmaster`*** or high level title in Programming competition, you will find that this problem is very easy to solve. Even this problem can be solved on any category of graph. Don't even care of this graph is randomly generated.

So in order to reflect your programming ability, you need to answer these queries ***`online`***.

To decrease the size of the input, Rikka provides an directed graph via a random number generator with given random seeds , denoted by two integers k_1 and k_2, Supposing the number of vertices and edges in the graph are n and m respectively, the following code in C++ tells you how to generate the graph and store the i-th directed edge between the vertex $u[i]$ and $v[i]$ in corresponding arrays. You can use the code directly in your submissions.

```
unsigned long long k1, k2;
int n, m, _u[100001], _v[100001];
unsigned long long xorShift128Plus() {
    unsigned long long k3 = k1 , k4 = k2;
    k1 = k4;
    k3 ^= k3 << 23;
    k2 = k3 ^ k4 ^ (k3 >> 17) ^ (k4 >> 26);
    return k2 + k4;
}

int wnext(int l, int r, int t) {
    int res = xorShift128Plus() % (r - l + 1) + l;
    for (int i = 1; i < t; ++i) {
        res = max(res, int(xorShift128Plus() % (r - l + 1) + l));
    }
    return res;
}

void gen(int _n, int _m, unsigned long long _k1, unsigned long long _k2) {
    n = _n, m = _m;
    k1 = _k1, k2 = _k2;
    int S = min(1000, n);
    for (int i = 1; i <= m; ++i) {
        _u[i] = wnext(1, min(n, ((i % S) + 1) * S), 50);
        _v[i] = wnext(1, min(n, ((i % S) + 1) * S), 50);
    }
}
```

Input

The first line contains 5 integers, $n(2 \le n \le 10^5)$, $m(1 \le m \le \min(10^5, n \cdot (n-1)))$, $q(1 \le q \le 10^5)$, $k_1, k_2(1 \le k_1, k_2 \le 10^9)$. Denoting the number of points, the number of edges, the number of queries, and the random seeds.

It is guaranteed that k_1 and k_2 are chosen randomly except for the sample.

Since the graph is randomly generated, it may contains self-loop or multiple edges.

In the next q lines, each line contains two integers u and $v(1 \le u, v \le n, u \ne v)$, representing query weather point u can reach v through some edges.

What you need to pay attention to is, you need to answer these queries online, so these queries will not be given to you at the beginning.

Output

For each queries, you need output "`Yes`"(without quotes) if u can reach v through some edges, or output "`No`"(without quotes).

Interaction Protocol

Initially, you will get the n, m, q, k_1, k_2 and the first queries.

You need to answer the i-th queries correctly before the $(i+1)$-th queries will be given to you.

If your answer is legal, Jury will return the next querires to you or terminate the program if the answer is last answer.

If Jury return -1 instead of a next queries, that means you made an invalid answer.

Exit immediately after receiving -1 and you will see `wrong answer` verdict. Otherwise, you can get an arbitrary verdict because your solution will continue to read from a closed stream.

After printing a answer, do not forget to output end of line and flush the output. Otherwise, you will get `idleness limit exceeded`. To do this, use:

- `fflush(stdout)` or `cout.flush()` in C++;
- `System.out.flush()` in Java;
- `flush(output)` in Pascal;
- `stdout.flush()` in Python;
- See the documentation for other languages.

Examples

standard input	standard output
10 90 3 123456789 987654321 1 2 2 1 10 9	No No Yes
2 1 1 123456789 987654321 1 2	No