Problem A. Jiangsu Geography

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

Jiangsu is an eastern-central coastal province of the People's Republic of China. It is one of the leading provinces in finance, education, technology, and tourism.

Jiangsu is divided into thirteen prefecture-level cities. Please output any three different prefecture-level cities of Jiangsu province.

Input

No input.

Output

Output three lines. Each line contains one prefecture-level city of Jiangsu province. All the names should be presented as pinyin, with only lowercase letters, and without any spaces.

Any three different prefecture-level cities of Jiangsu are acceptable, regardless of the order.

Example

standard input	standard output
	chengdu leshan yibin

Note

The sample output above is three prefecture-level cities in Sichuan province, which won't be accepted. But you can refer to its output format.

Problem B. Magic Horse

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

There is a grid with n rows and m columns of cells. Each cell is initially white. Little horse wants to dye all the white cells black.

Little Horse has learned magic from Little Rabbit, which can help him dye the cells. But Little Horse is not yet skilled in using magic, so his magic is somehow restricted: if he wants to dye a cell, at least 2 of the cells adjacent to it must be black. Two cells are adjacent if they share a common edge.

Obviously, when there are no black cells in the grid, Little Horse cannot even dye a single cell. So Little Horse invites Little Rabbit to help him dye some cells beforehand, as Little Rabbit has stronger magic to dye the cells without restriction.

Little Rabbit is reluctant to use too much magic. So he wants to know how many cells he needs to dye at least so that Little Horse can dye all the cells black.

Input

Two integers n, m ($1 \le n, m \le 10^9$), denoting the number of rows and columns of the grid.

Output

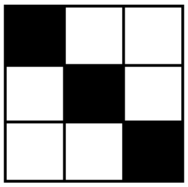
The number of cells Little Rabbit needs to dye at least.

Example

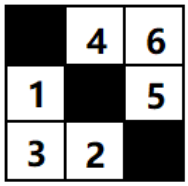
standard input	standard output
3 3	3

Note

When $n = m = 3$, here is a method for Little Rabbit to dye the cells.



After that, Little Horse can dye the remaining cells in the following order.



Problem C. Magic Rabbit

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

Little Rabbit is a magic rabbit living in human society. He drinks magic potion every day to disguise himself as a human. To make the potion, Little Rabbit needs to find two kinds of magic material, USAO and Camellia, and dissolve them in water.

One day, Little Rabbit wants to make some potion, but he's surprised to find that the materials are all used up, including the magic materials and the water. Luckily, Little Rabbit still has 3 bottles of ready-made potion. The potion in the first bottle has a_1 mg/ml of USAO and b_1 mg/ml of Camellia. The potion in the second bottle has a_2 mg/ml of USAO and b_2 mg/ml of Camellia. The potion in the third bottle has a_3 mg/ml of USAO and b_3 mg/ml of Camellia. We can assume that there's enough potion in the bottles.

Little Rabbit wants to know whether he can make a kind of potion that has x mg/ml of USAO and y mg/ml of Camellia with the help of the 3 bottles of ready-made potion.

Input

The first line of the input contains two integers a_1 and b_1 ($0 \le a_1, b_1 \le 1000$), indicating that the potion in the first bottle has a_1 mg/ml of USAO and b_1 mg/ml of Camellia.

The second line of the input contains two integers a_2 and b_2 ($0 \le a_2, b_2 \le 1000$), indicating that the potion in the second bottle has a_2 mg/ml of USAO and b_2 mg/ml of Camellia.

The third line of the input contains two integers a_3 and b_3 ($0 \le a_3, b_3 \le 1000$), indicating that the potion in the third bottle has a_3 mg/ml of USAO and b_3 mg/ml of Camellia.

The fourth line contains an integer n ($1 \le n \le 10^5$), indicating the number of Little Rabbit's queries.

In the next n lines, each line contains two integers x and y ($0 \le x, y \le 1000$), indicating that Little Rabbit wants to know whether he can make a kind of potion that has x mg/ml of USAO and y mg/ml of Camellia.

Output

For each query, if Little Rabbit is able to make the potion, output `YES` in a single line, otherwise output `NO` in a single line.

Example

standard input	standard output
1 1 3 1 2 3 4 2 1 0 0 2 2 3 3	YES NO YES NO

Note

For the sample input, when $x = 2$ and $y = 1$, Little Rabbit can use 10 ml of the potion in the first bottle and 10 ml of the potion in the second bottle. Then there is $10 \times 1 + 10 \times 3 = 40$ mg of USAO and $10 \times 1 + 10 \times 1 = 20$ mg of Camellia. The total volume of the liquid is $10 + 10 = 20$ ml. As a result, the potion has $40/20 = 2$ mg/ml of USAO and $20/20 = 1$ mg/ml of Camellia, which meets the requirement.

So the answer is `YES`.

When $x = 0$ and $y = 0$, Little Rabbit needs to make pure water with the help of the ready-made potion, which is obviously impossible. So the answer is `NO`.

Problem D. Eliminate It!

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

Let A be an array of integers $A_1, A_2, \ldots, A_n$. Now there is an eliminating game for Kanade. In the beginning, a counter is set to 0. An operation on the array A is defined as follows.

- Let n be the length of the array A.
- Find all the i which satisfy $\gcd(A_i, A_{(i \bmod n)+1}) \neq 1$. Let S be the set of i which satisfy the condition.
- If S is empty, stop the game.
- For all the $i \in S$, remove $A_{(i \bmod n)+1}$ from A, and the counter increase by 1. Note that the relative positions of the left elements do not change.
- Append the remaining elements from left to right to an empty array B. So the length of the array B is $n - |S|$, where $|S|$ indicates the number of elements in set S.
- Make the array A same as the array B. The indices of elements of A will remain continuous after the operation. The index of A will still start from 1.

Now Kanade should perform the operation on an array so that the counter is no less than $\lfloor \frac{n}{2} \rfloor$ when the game stops. Fortunately, Kanade can choose any permutation whose length is n as the initial array A. Please help her to choose the permutation.

Input

Only one line contains an integer n ($210 \leq n \leq 10^5$).

Output

Print n integers separated by spaces in a line, denoting the initial array A which Kanade can perform the operation for no less than $\lfloor \frac{n}{2} \rfloor$ times. Note that the initial array should be a permutation whose length is n.

Example

standard input	standard output
10	2 5 7 1 6 10 4 3 8 9

Note

In this example, Kanade performs operations in the following way.

1. For the first operation, $S = \{5, 6\}$. So the array A becomes $[2, 5, 7, 1, 6, 3, 8, 9]$.
2. For the second operation, $S = \{5\}$. So the array A becomes $[2, 5, 7, 1, 6, 8, 9]$.
3. For the third operation, $S = \{5\}$. So the array A becomes $[2, 5, 7, 1, 6, 9]$.
4. For the fourth operation, $S = \{5\}$. So the array A becomes $[2, 5, 7, 1, 6]$.
5. For the fifth operation, $S = \{5\}$. So the array A becomes $[5, 7, 1, 6]$.
6. For the sixth operation, $S = \emptyset$. So the game stops.

When the game stops, the counter is 5. So the permutation satisfies the requirement.

Note that the input in the example does not meet the constraint. So it won't appear in the test cases.

Please note that if the length or format of your output does not match the answer, you will possibly get a Presentation Error verdict.