

Problem A. 74755. Compression

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

Ayan has recently discovered an operation called *compression* that is used with strings. This operation takes a string and leaves only the first occurrences of letters that are present in the string and deletes all the other later occurrences.

For example, if we apply *compression* on a string «ACABACA», after the operation we will get «ACB» because we delete all the last three «A»-s and the second «C» by leaving only unique letters.

Given a string s , Ayan asks you to find the result of applying *compression* on s .

Input

The first line of input contains a single string s containing only uppercase English letters ($1 \leq |s| \leq 1000$).

Output

Output a single string — the result of applying *compression* on s .

Examples

standard input	standard output
ACABACA	ACB
ABCABCDABCDEABCDEF	ABCDEF
INTERNALIZATION	INTERALZO
KHABIB	KHABI

Problem B. 75754. Bye-bye, F.R.I.D.A.Y. 3

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

Tony Stark on a new mission again! He has assembled a new robot who is much stronger than the previous ones.

Today Tony, after coming from his vacation, heard that Captain America is retiring. He felt very disappointed and decided to persuade Captain America to return back.

That's why he asked his new robot to find Captain America's email address. It is known that a valid email address must appear in the following format: **AAA@BBB.CCC**, where AAA, BBB, and CCC are some **non-empty** strings containing **only lowercase English letters**.

Given the email address that was provided by the new robot, your task is to validate it.

Note that any deviation violates the given format.

Input

The first line of input contains a single string s — an email address that was provided by the robot ($5 \leq |s| \leq 30$).

Output

If the given email address is valid, print «Yes».

Otherwise, print «No».

Examples

standard input	standard output
<code>captainamerica@gmail.com</code>	Yes
<code>captain.gmail@com</code>	No
<code>iamtired@kbtu.kz</code>	Yes
<code>captain@@gmail.com</code>	No
<code>getoffmetony@mail.</code>	No

Problem C. 75046. High quality array

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

This time Rayan has a one-dimensional array a_1, a_2, \dots, a_n . He defines its quality to be the maximum sum among all the neighboring pairs of the array. Formally, for each i , such that $1 \leq i < n$, he calculates $a_i + a_{i+1}$ and takes the maximum among these values as the quality of the array.

Given an array of n integers, what is its quality by Rayan?

Input

The first line of input contains a single integer n — the size of the array ($2 \leq n \leq 10^5$).

The second line of input contains n space-separated integers a_1, a_2, \dots, a_n — the given array ($-10^5 \leq a_i \leq 10^5$).

Output

Output a single integer — the quality of the given array. Note that the quality may be negative.

Examples

standard input	standard output
6 1 2 10 6 -3 20	17
4 3 1 3 0	4
2 4 5	9
3 -1 2 -2	1

Problem D. 75752. Maximize

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

In this problem, you are given 8-bit number x . You have to flip exactly one bit of the x , so that the new number would be as great as possible.

For example, the binary representation of the number 164 is **10100100**. Flipping the bit number 6 would result in **11100100** which is 228 in decimal representation. Note that flipping another bit than sixth would result in a number that is less than 228.

Note that we numerate bits from zero, from right to left.

Input

The first line of input contains a single number x — 8-bit number ($1 \leq x < 2^8$).

Output

Output a single number — the greatest possible number that is obtained by flipping exactly one bit in the binary representation of x .

Examples

standard input	standard output
164	228
1	129
2	130
5	133

Problem E. 75044. Palindrome again

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

This task is similar to the task you have solved before (have you?).

But in this task, you have to check if the given array is *palindrome* or not. An array is *palindrome* if and only if it is same as its reversed form.

Input

The first line of input contains a single number n — the size of the array ($1 \leq n \leq 10^5$).

The second line of input contains n space-separated integers a_1, a_2, \dots, a_n — the given array ($1 \leq a_i \leq 10^4$).

Output

If the given array is a palindrome, print «Palindrome».

Otherwise, print «Not palindrome».

Examples

standard input	standard output
5 2 2 4 2 2	Palindrome
1 5	Palindrome
4 2 4 4 3	Not palindrome

Problem F. Validol League

Input file: `standard input`
Output file: `standard output`
Time limit: 1 second
Memory limit: 64 megabytes

There is a football tournament that is held every year in Berland. This year the final stage is going to be played between the two strongest teams of Berland — Barsenal and Arselona. To make the results of the finals fair, the organizers decided to break up the finals into two separate games: first game is held at the home stadium of Barsenal and the second game is held at the home stadium of Arselona.

The winner of the finals is defined in the following way. For each team, organizers count the number of total goals in two games. The team, who has more total goals than another is recognized as a winner.

If the total goals are equal, for each team, the organizers consider the number of away goals: goals that were scored on the pitch of an opponent. In that case, the team with more away goals than another is recognized as a winner of the tournament.

Sometimes, in Berland miracles take place. The teams can give up and announce that there is no winner in case of the equal total number of goals and the equal number of away goals.

Given the results of the two games, can you help the organizers with identifying the winner of the tournament?

Input

The first line of input contains two space-separated non-negative integers, the result of the game at the home stadium of Barsenal, a and b — goals of the Barsenal and Arselona respectively ($0 \leq a, b \leq 100$).

The second line of input contains two space-separated non-negative integers, the result of the game at the home stadium of Arselona, c and d — goals of the Arselona and Barsenal respectively ($0 \leq c, d \leq 100$).

Output

If the winner is Barsenal, print in the first line «Barsenal».

If the winner is Arselona, print in the first line «Arselona».

Otherwise, print in the first line «Friendship».

In the second line, output two-space separated integers — total goals scored by Barsenal and Arselona respectively.

Examples

standard input	standard output
2 1 0 0	Barsenal 2 1
2 1 2 1	Friendship 3 3
3 2 2 1	Arselona 4 4

Problem G. 75140. Apartment

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

Artur has moved to a new apartment this month. Today he decided to cover the floor of his living room with linoleum. The room has a form of a rectangle with sides a and b meters.

That's why he had asked his friend Nurbek to bring one piece of linoleum. Nurbek has brought a rectangular piece of linoleum with sides x and y meters. Now Artur wonders if it is possible to cover his living room entirely by doing **at most two cuts** (two or less) on the piece of linoleum that was brought by Nurbek. Artur can freely rotate the piece of linoleum and wants to make cut(s) that are parallel to the sides of the linoleum.

Note that in order to cover his living room, Artur needs exactly one piece of linoleum that has same sizes as his room.

Can Artur complete his task?

Input

The first line of input contains four space-separated numbers a, b, x, y — the sides of his living room, and the sides of the piece of linoleum respectively ($1 \leq a, b, x, y \leq 1000$).

Output

If Artur can take the piece of linoleum (and probably rotates) and cover his living room by the piece of linoleum by doing at most two cuts, print «Thanks, Nurbek» (without quotes).

Otherwise, print «Impossible» (without quotes).

Examples

standard input	standard output
5 7 6 4	Impossible
8 5 10 5	Thanks, Nurbek
13 15 15 13	Thanks, Nurbek
4 6 4 5	Impossible

Note

In the first example, he can not get a piece of linoleum with sides 5 and 7 by doing any number of cuts.

In the second example, he can cut the piece of linoleum once and make its size 8 and 5.

In the third example, he just rotates the piece and makes no cuts to fit the room's sizes.

Problem H. 75795. Greatest multiplier

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

Given two numbers a and b .

Your task is to implement a **function** that takes two integers a and b as arguments and finds the largest multiplier of a that is not greater than b .

Note. All the accepted solutions for this problem will be rechecked by assistants.

Input

The first line of input contains two space-separated integers a and b ($1 \leq a \leq b \leq 1000$).

Output

Output a single integer — the largest multiplier of a that is not greater than b .

Examples

standard input	standard output
25 100	100
3 20	18
13 100	91
10 10	10

Problem I. 73525. Rotate

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

In this task, you are given a two-dimensional array A of n rows and m columns. Your task is to rotate the array by 90 degrees counter-clockwise. After rotating the array the last column of the initial array will become the first row, the pre-last column will become the second row and so on. Eventually, the array will have m rows and n columns.

For clearance look the given examples.

Input

The first line of input contains two positive integers n and m — the numbers of rows and columns of the given array A , respectively ($1 \leq n, m \leq 200$).

Each of the next n lines contain m space-separated positive integers — the given two-dimensional array ($1 \leq A_{ij} \leq 200$).

Output

Output m lines each containing n space-separated integers — two-dimensional array A , rotated by 90 degrees counter-clockwise.

Example

standard input	standard output
2 3	3 6
1 2 3	2 5
4 5 6	1 4

Problem J. 73347. Circle world

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

Two friends Alan and NurlashKO are playing a video game. In this game, they are standing on two different positions on the border of some circle. There is a point on the circle that is defined to be as the main point of the game. We consider this point as the beginning of coordinates on the circle.

Knowing clockwise angle-distances of Alan and NulashKO from the main point, can you calculate minimum angle-distance between them?

Any point on a circle border can be described by its clockwise angle distance from the main point by a number from $[0, 360)$.

Input

Single line contains two space-separated integers a and b — clockwise angle distances of Alan and NurlashKO from the main point respectively ($0 \leq a, b \leq 359$).

Output

Output a single integer — minimum angle-distance between Alan and NurlashKO.

Examples

standard input	standard output
25 70	45
0 270	90
240 50	170

Note

In the first example, we take clockwise angle distance from Alan to NurlashKO, which is $70 - 25 = 45$.

In the second example, we can take the counter-clockwise angle distance from Alan to NurlashKO, so the answer is $360 - (270 - 0) = 90$.

In the third example, we choose the minimum angle distance to be $360 - (240 - 50) = 170$, which is the clockwise distance from Alan to NurlashKO. Another option would be to choose the counter-clockwise distance from Alan to NurlashKO, in this case, we would have 190 which is more than 170.

Problem K. 73936. Inequality

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

We all know that Elibay has some strong abilities in solving some rare and hard problems, don't we? However, this time Elibay has a problem that he has been struggling with for a while. Given inequality:

$$5x - 4 \leq a$$

Given the parameter a , find the largest integer value of x that satisfies this inequality.

Input

Single line contains a single integer a — parameter from the inequality ($1 \leq a \leq 1000$).

Output

Output a single integer — largest integer that satisfies above inequality.

Examples

standard input	standard output
3	1
7	2