Problem A. 75352. Blocks

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

You are given an array of 0-s and 1-s. Find the number of blocks of 1-s.

Block is defined as a contiguous subarray of the given array consisting only of 1-s and which has 1 neither on its left side nor right side.

It is guaranteed that the first and last elements of the array are equal to 0.

Input

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

The second line contains n space-separated numbers $a_1, a_2, ..., a_n$ — elements of the given array $(0 \leq a_i \leq 1)$.

Output

Output a single number — the number of blocks, containing only ones.

Examples

standard input	standard output
8	2
0 1 1 0 1 1 1 0	
6	1
0 1 1 1 1 0	

Note

In the first example, the first block starts at the second element and ends at the third, the second block starts at position 5 and ends at position 7.

In the second example, there is only one block, which starts at position 2 and ends at position 5.

Problem B. 75250. Maximum of three

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

Your task is to implement a function that takes three integers x, y and z as arguments and returns the maximum value among these three integers.

Your code could look as follows:

```
int get_maximum(int x, int y, int z) {
    // your code that gets the maximum value
    // among x, y, z and returns it
}
```

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

Input

The first line of input contains three space-separated integers x, y, z ($-1000 \leq x, y, z \leq 1000$).

Output

Output a single integer — maximum value among the given three integers.

Problem C. 73375. Chess matrix

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

Normal chess boards have size 8x8, but in this problem, your task is to generate a chess matrix of size n rows and m columns. Chess matrix's cells are filled with one of the two colors: white or black. No two adjacent cells sharing a side can have the same color. The color of the leftmost top cell is black. In a chess matrix, number 1 corresponds to the black color, and 0 corresponds to the white color.

Input

The first line of input contains two space-separated integers n and m — the size of the chess matrix $(1 \le n, m \le 100)$.

Output

Output n lines, each containing m integers with **no space between them** (0 or 1) — the chess matrix.

Examples

standard input	standard output
3 5	10101
	01010
	10101
8 8	10101010
	01010101
	10101010
	01010101
	10101010
	01010101
	10101010
	01010101

Problem D. 75224. Flip

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. Flip all of the bits in its binary representation. Flipping a bit means replacing the bit with the opposite bit.

For example, the binary representation of the number 183 is **10110111**. Flipping all the bits will result in **01001000**, which is 72 in decimal representation.

Input

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

Output

Output a single number — the number that is the result of flipping all the bits in the binary representation of x.

Examples

standard input	standard output
183	72
15	240

Problem E. 75142. Bye-bye, F.R.I.D.A.Y.

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

Tony Stark on a new mission! He has assembled a new robot who is much stronger than the previous ones. This time he will give the robot an opportunity to name himself. Tony Stark wants the robot's name to be more or less similar to normal human names, that's why he provided the robot with some guidelines:

- Length of the name must be between 3 and 15 characters (inclusively).

- There must be at least one vowel letter (one of **a, e, i, o, u, y** or one of **A, E, I, O, U, Y**).

- It must start with an uppercase Latin letter (either vowel or consonant).

- All the other letters except the first one must be lowercase Latin letters (either vowel or consonant).

These robots sometimes make an attempt to fool Tony Stark. Can you check if the robot has generated a name for himself according to Tony's guidelines or not?

Input

The single line of input consists of a string s — generated name by the robot. The string s consists of lowercase and uppercase Latin letters.

Output

If the robot has generated a valid name, output «Hi, » (without quotes) followed by the robot's new valid name.

Otherwise, print «Invalid name» (without quotes).

Examples

standard input	standard output
`jarvis`	`Invalid name`
`Wallie`	`Hi, Wallie`
`Ac`	`Invalid name`
`Thebestrobotintheworld`	`Invalid name`
`TheBestRobot`	`Invalid name`
`Robot`	`Hi, Robot`

Problem F. 75132. Attraction

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

Temirulan works at an attraction nearby park. Right now n people are arranged in a queue waiting for their turn to use the attraction.

The attraction is specifically designed, so it puts a limit on the heights of people that can use the attraction, meaning that all people that are not tall enough cannot use it. Temirulan has to estimate electricity resources that the attraction needs, so he worries how many people fit into this height limitation.

Given height limitation for the attraction and heights of people that want to enjoy it, can you count the number of people that fit into the height limitation?

Input

The first line of input contains a single number n — the number of people that are arranged in a queue ($1 \le n \le 1000$).

The second line of input contains n space-separated numbers $h_1, h_2, ..., h_n$ — the heights of people that want to use the attraction ($130 \le h_i \le 210$).

The third line of input contains a single number H — the limitation on the height of people that can use the attraction, meaning that any person, whose height is strictly less than H is not allowed to use the attraction ($130 \le H \le 210$).

Output

Output a single number — the number of people from the given list that are allowed to use the attraction.

Examples

standard input	standard output
5 150 180 167 174 162 160	4
3 170 174 178 175	1

Problem G. 75071. Shooting gallery

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

Nurymzhan has found for himself a new activity — shooting gallery. During this activity, he shoots with a weapon at n targets. The targets are numbered in increasing order of their difficulty of hitting on them.

If he hits on the target number i he gets i points. Nurymzhan has made shoots many times. Yet, for each target i he has the number of hits c_i on this target.

Your task is to calculate the total number of points earned by Nurymzhan.

Input

The first line of input contains single integer n — the number of targets at the shooting gallery.

The second line of input contains n space-separated numbers $c_1, c_2, ..., c_n$ — the numbers of hitting on each of these n targets.

Output

Output a single number — the total points earned by Nurymzhan at the shooting gallery.

Examples

standard input	standard output
3 2 0 1	5
4 1 1 2 1	13

Note

In the first sample, Nurymzhan earns 2 points (2 shots with 1 point) for his shots on target number 1 and 3 points for his single shot on target 3. These points sum up to 5 ($1 * 2 + 3 * 1 = 5$).

In the second sample, he earns 1, 2, 4 points for his shots on targets 1, 2 and 4 respectively. Yet, he gets 6 points on his two shots on target number 2. These points sum up to 13 ($1 * 1 + 2 * 1 + 3 * 2 + 4 * 1 = 13$).

Problem H. 73540. Perimeter

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

You are given both sides of a rectangle, find its perimeter.

Input

In a single line given two integers a and b — two sides of a rectangle.

Output

Output a single integer — perimeter of the given rectangle.

Examples

standard input	standard output
3 6	18
7 9	32

Problem I. 73528. Candies

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

Aidana loves making happy her three little sisters. This time she has brought two boxes with a and b candies in them respectively. She wants to distribute some candies among her sisters. Aidana suspects, if any of the sisters find out that another sister has more candies than her, this sister will be upset. That's why she wants to distribute candies equally.

If Aidana opens a box, she will have to distribute all the candies that were inside of it.

Aidana wonders, if she can open one or two boxes and distribute all candies in the opened box(es) so that no sister will be upset.

Is that possible?

Input

The first line contains two integers a and b — the number of candies in each of the boxes respectively ($1 \le a, b \le 1000$).

Output

If Aidana can distribute candies equally among three sisters by opening one or two boxes, print «Yes» (without quotes).

Otherwise, print «No» (without quotes).

Examples

standard input	standard output
3 7	Yes
4 5	Yes
7 10	No

Note

In the first example, she can distribute the contents of the box with 3 candies.

In the second example, she should open both boxes and distribute $4 + 5 = 9$ candies, which is divisible by 3.

In the third example, it is impossible to distribute any candies because she cannot distribute any of this amounts of candies: 7, 10, 17.

Problem J. 73371. Folding

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

There is a rectangular piece of paper with sides a and b. You want to fold the paper in half exactly in the middle horizontally either vertically. Is it possible to get a piece of paper with sides x and y from the original piece if you are allowed to fold it exactly once as in the described way above?

Note that you can not rotate the piece of paper.

Input

Given four space-separated integers in a single line a, b, x, y — sides of original and folded pieces of paper respectively ($1 \leq a, b, x, y \leq 1000$).

Output

If it is possible to get a piece of paper with sides x and y, print «Yes» (without quotes).

Otherwise, print «No» (without quotes).

Examples

standard input	standard output
4 7 2 7	Yes
6 6 3 3	No

Problem K. 73505. Prefixes

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

Given a string. Output all of its prefixes.

A prefix of a string is defined as a contiguous substring of the string which starts at the first position.

Input

The first line contains a string s, $(1 \leq |s| \leq 20)$.

Output

Output n lines containing all prefixes of string s. They should appear in the increasing order of their lengths.

Example

standard input	standard output

`almaty`	`a`
	`al`
	`alm`
	`alma`
	`almat`
	`almaty`