Codeforces Round #129 (Div. 2)

A. Little Elephant and Rozdil

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

The Little Elephant loves Ukraine very much. Most of all he loves town Rozdol (ukr. "Rozdil").

However, Rozdil is dangerous to settle, so the Little Elephant wants to go to some other town. The Little Elephant doesn't like to spend much time on travelling, so for his journey he will choose a town that needs minimum time to travel to. If there are multiple such cities, then the Little Elephant won't go anywhere.

For each town except for Rozdil you know the time needed to travel to this town. Find the town the Little Elephant will go to or print "`Still Rozdil`", if he stays in Rozdil.

Input

The first line contains a single integer n ($1 \le n \le 10^5$) — the number of cities. The next line contains n integers, separated by single spaces: the i-th integer represents the time needed to go from town Rozdil to the i-th town. The time values are positive integers, not exceeding 10^9.

You can consider the cities numbered from 1 to n, inclusive. Rozdil is not among the numbered cities.

Output

Print the answer on a single line — the number of the town the Little Elephant will go to. If there are multiple cities with minimum travel time, print "`Still Rozdil`" (without the quotes).

Examples

input
2 7 4
output
2

input
7 7 4 47 100 4 9 12
output
Still Rozdil

Note

In the first sample there are only two cities where the Little Elephant can go. The travel time for the first town equals 7, to the second one — 4. The town which is closest to Rodzil (the only one) is the second one, so the answer is 2.

In the second sample the closest cities are cities two and five, the travelling time to both of them equals 4, so the answer is "`Still Rozdil`".

B. Little Elephant and Sorting

time limit per test: 0.5 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

The Little Elephant loves sortings.

He has an array a consisting of n integers. Let's number the array elements from 1 to n, then the i-th element will be denoted as a_i. The Little Elephant can make one move to choose an arbitrary pair of integers l and r $(1 \le l \le r \le n)$ and increase a_i by 1 for all i such that $l \le i \le r$.

Help the Little Elephant find the minimum number of moves he needs to convert array a to an arbitrary array sorted in the non-decreasing order. Array a, consisting of n elements, is sorted in the non-decreasing order if for any i $(1 \le i < n)$ $a_i \le a_{i+1}$ holds.

Input

The first line contains a single integer n $(1 \le n \le 10^5)$ — the size of array a. The next line contains n integers, separated by single spaces — array a $(1 \le a_i \le 10^9)$. The array elements are listed in the line in the order of their index's increasing.

Output

In a single line print a single integer — the answer to the problem.

Please, do not use the `%lld` specifier to read or write 64-bit integers in C++. It is preferred to use the `cin`, `cout` streams or the `%I64d` specifier.

Examples

input
3 1 2 3
output
0

input
3 3 2 1
output
2

input
4 7 4 1 47
output
6

Note

In the first sample the array is already sorted in the non-decreasing order, so the answer is 0.

In the second sample you need to perform two operations: first increase numbers from second to third (after that the array will be: `[3, 3, 2]`), and second increase only the last element (the array will be: `[3, 3, 3]`).

In the third sample you should make at least 6 steps. The possible sequence of the operations is: `(2; 3), (2; 3), (2; 3), (3; 3), (3; 3), (3; 3)`. After that the array converts to `[7, 7, 7, 47]`.

C. Little Elephant and Interval

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

The Little Elephant very much loves sums on intervals.

This time he has a pair of integers l and r ($l \le r$). The Little Elephant has to find the number of such integers x ($l \le x \le r$), that the first digit of integer x equals the last one (in decimal notation). For example, such numbers as 101, 477474 or 9 will be included in the answer and 47, 253 or 1020 will not.

Help him and count the number of described numbers x for a given pair l and r.

Input

The single line contains a pair of integers l and r ($1 \le l \le r \le 10^{18}$) — the boundaries of the interval.

Please, do not use the `%lld` specifier to read or write 64-bit integers in C++. It is preferred to use `cin`, `cout` streams or the `%I64d` specifier.

Output

On a single line print a single integer — the answer to the problem.

Examples

input
2 47
output
12

input
47 1024
output
98

Note

In the first sample the answer includes integers `2, 3, 4, 5, 6, 7, 8, 9, 11, 22, 33, 44`.

D. Little Elephant and Cards

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

The Little Elephant loves to play with color cards.

He has n cards, each has exactly two colors (the color of the front side and the color of the back side). Initially, all the cards lay on the table with the front side up. In one move the Little Elephant can turn any card to the other side. The Little Elephant thinks that a set of cards on the table is funny if at least half of the cards have the same color (for each card the color of the upper side is considered).

Help the Little Elephant to find the minimum number of moves needed to make the set of n cards funny.

Input

The first line contains a single integer n ($1 \le n \le 10^5$) — the number of the cards. The following n lines contain the description of all cards, one card per line. The cards are described by a pair of positive integers not exceeding 10^9 — colors of both sides. The first number in a line is the color of the front of the card, the second one — of the back. The color of the front of the card may coincide with the color of the back of the card.

The numbers in the lines are separated by single spaces.

Output

On a single line print a single integer — the sought minimum number of moves. If it is impossible to make the set funny, print -1.

Examples

input
3 4 7 4 7 7 4
output
0

input
5 4 7 7 4 2 11 9 7 1 1
output
2

Note

In the first sample there initially are three cards lying with colors 4, 4, 7. Since two of the three cards are of the same color 4, you do not need to change anything, so the answer is 0.

In the second sample, you can turn the first and the fourth cards. After that three of the five cards will be of color 7.

E. Little Elephant and Furik and Rubik

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Little Elephant loves Furik and Rubik, who he met in a small city Kremenchug.

The Little Elephant has two strings of equal length a and b, consisting only of uppercase English letters. The Little Elephant selects a pair of substrings of equal length — the first one from string a, the second one from string b. The choice is equiprobable among all possible pairs. Let's denote the substring of a as x, and the substring of b — as y. The Little Elephant gives string x to Furik and string y — to Rubik.

Let's assume that $f(x, y)$ is the number of such positions of i ($1 \le i \le |x|$), that $x_i = y_i$ (where $|x|$ is the length of lines x and y, and x_i, y_i are the i-th characters of strings x and y, correspondingly). Help Furik and Rubik find the expected value of $f(x, y)$.

Input

The first line contains a single integer n ($1 \le n \le 2 \cdot 10^5$) — the length of strings a and b. The second line contains string a, the third line contains string b. The strings consist of uppercase English letters only. The length of both strings equals n.

Output

On a single line print a real number — the answer to the problem. The answer will be considered correct if its relative or absolute error does not exceed 10^{-6}.

Examples

input
2 AB BA
output
0.400000000

input
3 AAB CAA
output
0.642857143

Note

Let's assume that we are given string $a = a_1 a_2 \dots a_{|a|}$, then let's denote the string's length as $|a|$, and its i-th character — as a_i.

A substring $a[l \dots r]$ ($1 \le l \le r \le |a|$) of string a is string $a_l a_{l+1} \dots a_r$.

String a is a substring of string b, if there exists such pair of integers l and r ($1 \le l \le r \le |b|$), that $b[l \dots r] = a$.

Let's consider the first test sample. The first sample has 5 possible substring pairs: `("A", "B")`, `("A", "A")`, `("B", "B")`, `("B", "A")`, `("AB", "BA")`. For the second and third pair value $f(x, y)$ equals 1, for the rest it equals 0. The probability of choosing each pair equals $\frac{1}{5}$, that's why the answer is $\frac{1}{5} \cdot 0 + \frac{1}{5} \cdot 1 + \frac{1}{5} \cdot 1 + \frac{1}{5} \cdot 0 + \frac{1}{5} \cdot 0 = \frac{2}{5} = 0.4$.