Problem A. Binary Ranges

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

You are given a string **S** of length **n**. Each character of **S** is either digit '0' or '1'.

Tell whether **all** the given '1' form a consecutive subsequence in the string or not. Also report the length of the consecutive subsequence if it exists.

Input

The first line of input contains n denoting the length of string. Next line of input contains the string **S**.

$1 \leq n \leq 10^5$

Output

Print "NO" (without quotes) if described sequence of '1' doesn't exist.

Else print "YES" (without quotes) and the corresponding largest length. Both things seperated by a space.

Examples

standard input	standard output
12 101111111111	NO
3 000	NO
4 1111	YES 4

Problem B. Hardik and Lawrence dealing with Deadlines

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

Hardik and Lawrence love finishing assignments and this semester they are given all assignments at the starting of the semester. Each assignment takes a_i amount of days to get completed. They are planning to finish the assignments in minimum time as possible, so that they can work on their projects this semester. They have decided to complete the assignments in the following manner

- Pick assignments on a day in a segment $[i....j]$, and finish some part of each assignment in the segment [i...j]. where $1 \leq i \leq j \leq n$. Picking assignments in a segment $[i...j]$ denotes picking all assignments from i^{th} index till the j^{th} index.;

Given an integer n, and an array A$[a_1, ...a_n]$, denoting n assignments where each assignment takes a_i amount of days respectively. Help them find the minimum number of days in which they complete the assignment in.

NOTE: use only recursion to solve this problem.

Input

The first line contains an integer n, and the second line contains an array **A containing n elements.**

Constraints:

- $1 \leq n \leq 10^3$
- $1 \leq A_i \leq 10^9$

Output

The minimum number of days required to finish the n assignments.

Examples

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

Note

In the first test case the minimum number of days taken is 4, as only a single assignment is there which takes 4 days to complete.

In the second test case the minimum number of days taken is 10, by choosing the segment $A[1..3]$ which takes one day, then $A[3]$ which takes 2 days and $A[1]$ takes 7 days. Hence $1 + 2 + 7 = 10$

Problem C. Ever Increasing

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

Find a number n such that

$$n^2 + \sqrt{n} + 100 = K.$$

Input

The only line of input contains one real number K ($100.0 \le K \le 10^{12}$).

Output

The only line of output contains the required number n.

The answer will be considered correct if the relative or absolute error is not more than 10^{-6}.

Examples

standard input	standard output
100	0.0000000000
1000	29.9087130131

Note

Let‘s take float num = 5.489581233314;

So in order to print 10 digits after the decimal point we follow the syntax :

printf(“%0.10f“,num);