If Index
Problem ID: ifindex

Ekko is working on his time-traveling machine to reunite with Powder in a parallel universe. To achieve this, he must write code in a peculiar programming language called C-IF.

C-IF has an extremely minimalistic syntax: the only keyword is `if`, and the only allowed characters are `{`, and `}`, which must always be properly matched. A C-IF program is considered valid if:

- It consists only of `if`, `{`, and `}`.
- It is *balanced*, which means there are an equal number of `{` and `}` characters, and we can pair up each `{` with a `}` such that the `{` character shows up first.

For example, `if{{}}` and `ifif{if}` are valid C-IF programs, while `xxx`, `{if`, and `}if{` are not.

Ekko measures how annoying a C-IF program is using its if-index, defined as follows:

- For each `if`, compute its nesting depth, defined as the number of `{}` layers enclosing it
- Given the array of nesting depths, which has n elements, we define the if-index as the element which occupies position number $\lfloor \frac{n+1}{2} \rfloor$ after we sort the elements in non-decreasing order (where the first element has index 1 and the last element has index n)
- If there are no `if` statements in the program, we define the if-index to be -1

Help Ekko compute the if-index for a valid C-IF program.

Input

The only line of input is a string S ($|S| \leq 5000$), a valid C-IF program.

Output

Output one line containing a single number, the if-index of the program S.

Sample Input 1	Sample Output 1
`if`	`0`

Sample Input 2	Sample Output 2
`if{{ifif}if{if}}`	`2`