

DMOPC '17 Contest 2 P4 - Mimi and Dictionary

Mimi is playing with a dictionary when she gets a great idea! Throw random words together, give them a definition, and then make a problem about it!

For this problem, Mimi has decided to define a **proper prefix palindrome** of string S as a proper prefix of S which is also a palindrome. Given a string S , find the length of the longest proper prefix palindrome which appears at least twice.

Constraints

Let $|S|$ denote the length of string S .

Subtask 1 [10%]

$$1 \leq |S| \leq 100$$

Subtask 2 [20%]

$$1 \leq |S| \leq 1\,000$$

Subtask 3 [70%]

$$1 \leq |S| \leq 10^5$$

Input Specification

The first and only line of input will contain of a single string S , consists of only lowercase letters.

Output Specification

The length of the longest proper prefix palindrome which appears at least twice.

Sample Input 1

```
aaaa
```

Sample Output 1

```
3
```

Explanation for Sample Output 1

The longest proper prefix palindrome is `aaa`.

Sample Input 2

abab

Sample Output 2

1

Explanation for Sample Output 2

The longest proper prefix palindrome is `a`.