

ACM 2016 - Periodic String

Define a *k*-periodic string as follows:

A string *s* is *k*-periodic if $|s|$, the length of the string, is a multiple of *k* and, if you chop the string up into $|s|/k$ substrings of length *k*, then each of those substrings (except the first) is the same as the previous substring, but with its last character moved to the front.

For example, the following string is 3-periodic:

```
abccabbcaabc
```

The above string breaks up into substrings `abc`, `cab`, `bca`, and `abc`, and each substring (except the first) is a rotation of the previous substring (`abc` -> `cab`, `cab` -> `bca`, `bca` -> `abc`).

Given a string, determine the smallest *k* for which the string is *k*-periodic.

Input Format

Input will be a single line containing a string *s*, consisting only of lower-case letters.

Constraints

$$1 \leq |s| \leq 100$$

Output Format

Print a single line containing an integer denoting the smallest value of *k* for which the input string is *k*-periodic.

Sample Input 0

```
aaaaaaaa
```

Sample Output 0

```
1
```

Sample Input 1

```
abbaabbaabba
```

Sample Output 1

```
2
```

Sample Input 2

```
abcdef
```

Sample Output 2

```
6
```

Sample Input 3

abccabbcaabc

Sample Output 3

Sample Input 4

[illegible]

Sample Output 4

Sample Input 5

aeiouuaeioouaei

Sample Output 5

Sample Input 6

abcdefghijklmnopqrstuvwxyzabcdefghijklmnopqrstuvwxyz

Sample Output 6

Sample Input 7

abcdefghijklmnopqrstuvwxyzabcdefghijklmnopqrstuvwxyz

Sample Output 7

Sample Input 8

abcdabcbddabcbabc

Sample Output 8

Sample Input 9

abcdefghijklmnopqrstuvwxyzabcdefghijklmnopqrstuvwxyzabcdefghijklmnopqrstuvwxyz

Sample Output 9

50

Sample Input 10

abcdefghijkljabcdefghijabcdefghhijabcdefghghijabcdef

Sample Output 10

10