APIO '14 P1 - Palindromes

Time limit: 0.6s **Memory limit:** 128M

You are given a string of lowercase Latin letters. Let us define a substring's "occurrence value" as the number of the substring occurrences in the string multiplied by the length of the substring. For a given string find the largest occurrence value of palindromic substrings.

Notes

$|s|$ is the length of string s.
A substring of string $s_1 s_2 \ldots s_{|s|}$ is any non-empty string $s_i s_{i+1} \ldots s_j$, where $1 \leq i \leq j \leq |s|$. Any string is also its own substring.
A string is called palindromic, if it reads the same in either direction: from left to right and from right to left.

Input Specification

The only line of input contains a non-empty string of lowercase Latin letters (`a` - `z`).

Output Specification

Output one integer – the largest occurrence value of palindromic substrings.

Sample Input 1

```
abacaba
```

Sample Output 1

```
7
```

Explanation for Sample Output 1

There are seven palindromic substrings `a`, `b`, `c`, `aba`, `aca`, `bacab`, `abacaba`.

- `a` has 4 occurrences in the given string, its occurrence value is $4 \times 1 = 4$
- `b` has 2 occurrences in the given string, its occurrence value is $2 \times 1 = 2$
- `c` has 1 occurrence in the given string, its occurrence value is $1 \times 1 = 1$
- `aba` has 2 occurrences in the given string, its occurrence value is $2 \times 3 = 6$

- `aca` has 1 occurrence in the given string, its occurrence value is $1 \times 3 = 3$
- `bacab` has 1 occurrence in the given string, its occurrence value is $1 \times 5 = 5$
- `abacaba` has 1 occurrence in the given string, its occurrence value is $1 \times 7 = 7$

So, the largest occurrence value of palindromic substrings is 7.

Sample Input 2

```
www
```

Sample Output 2

```
4
```

Scoring

Subtask 1 (points: 8)

$1 \leq |s| \leq 100$

Subtask 2 (points: 15)

$1 \leq |s| \leq 1\,000$

Subtask 3 (points: 24)

$1 \leq |s| \leq 10\,000$

Subtask 4 (points: 26)

$1 \leq |s| \leq 100\,000$

Subtask 5 (points: 27)

$1 \leq |s| \leq 300\,000$