

# APIO '14 P1 - Palindromes

---

You are given a string of lower-case 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 length of string  $s$ .

A substring of string  $s_1s_2 \dots s_{|s|}$  is any non-empty string  $s_is_{i+1} \dots s_j$ , 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 lower-case 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 (8 points)

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

### Subtask 2 (15 points)

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

### Subtask 3 (24 points)

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

### Subtask 4 (26 points)

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

### Subtask 5 (27 points)

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