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## Short Palindrome

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Problem

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Consider a string,  $s$ , of  $n$  lowercase English letters where each character,  $s_i$  ( $0 \leq i < n$ ), denotes the letter at index  $i$  in  $s$ . We define an  $(a, b, c, d)$  palindromic tuple of  $s$  to be a sequence of indices in  $s$  satisfying the following criteria:

- $s_a = s_d$ , meaning the characters located at indices  $a$  and  $d$  are the same.
- $s_b = s_c$ , meaning the characters located at indices  $b$  and  $c$  are the same.
- $0 \leq a < b < c < d < |s|$ , meaning that  $a, b, c$ , and  $d$  are ascending in value and are valid indices within string  $s$ .

Given  $s$ , find and print the number of  $(a, b, c, d)$  tuples satisfying the above conditions. As this value can be quite large, print it modulo  $10^9 + 7$ .

Input Format

A single string denoting  $s$ .

Constraints

- $1 \leq |s| \leq 10^6$
- It is guaranteed that  $s$  only contains lowercase English letters.

Output Format

Print the the number of  $(a, b, c, d)$  tuples satisfying the conditions in the *Problem Statement* above. As this number can be very large, your answer must be modulo  $(10^9 + 7)$ .

Sample Input 0

```
kkkkkkz
```

Sample Output 0

```
15
```

Explanation 0

The letter  $z$  will not be part of a valid tuple because you need at least two of the same character to satisfy the conditions defined above. Because all tuples consisting of four  $k$ 's are valid, we just need to find the number of ways that we can choose four of the six  $k$ 's. This means our answer is  $\binom{6}{4} \bmod (10^9 + 7) = 15$ .

Sample Input 1

```
ghhggh
```

Sample Output 1

```
4
```

Explanation 1

The valid tuples are:

1.  $(0, 1, 2, 3)$
2.  $(0, 1, 2, 4)$
3.  $(1, 3, 4, 5)$
4.  $(2, 3, 4, 5)$

Thus, our answer is  $4 \bmod (10^9 + 7) = 4$ .

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Submissions: 247

Max Score: 40

Difficulty: Medium

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