Bloomberg CODECON

Memory Limit: 1024 MB
Time Limit: 5 s

Yet Another Compliance Problem (125 points)

Introduction

Your teammate tried to fix the bug, but only managed to make it worse! Now the filter will only accept words that are already palindromes.

You are now tasked with writing another add-on that determines **how many different words** you can send through the system given a set of characters.

For example:

- bbaa can be sent in two different ways: abba and baab
- bbaacc can be sent in six different ways: baccab, abccba, acbbca, cabbac, bcaacb, and cbaabc.

Input Specifications

Your program will take

- A **string S** denoting the set of characters to be tested. All letters in the alphanumeric input will be lowercase **(1 ≤ LENGTH(S) ≤ 500)**

Output Specifications

Based on the input, print out the **total number of unique palindromes** that can be created from the input.

Sample Input/Output

Input

```
bbaa
```

Output

```
2
```

Explanation

bbaa can be re-arranged to abba and baab, which are palindromes.

Input

```
abcdef
```

Output

```
0
```

Explanation

abcdef has no variations that are palindromes.

Input

bbaacc

Output

6

Explanation

bbaacc can make the following palindromes: baccab, bcaacb, cbaabc, cabbac, acbbca, abccba.