Beautiful Strings

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You are given a string, S, consisting of lowercase English letters.

A string is *beautiful* with respect to S if it can be derived from S by removing *exactly* 2 characters.

Find and print the number of different strings that are *beautiful* with respect to S.

Input Format

A single string of lowercase English letters denoting S.

Constraints

- $3 \leq |S| \leq 10^6$
- $3 \leq |S| \leq 20$ holds for test cases worth at least 15% of the problem's score.
- $3 \leq |S| \leq 2000$ holds for test cases worth at least 30% of the problem's score.

Output Format

Print the number of different strings that are *beautiful* with respect to S.

Sample Input

```
abba
```

Sample Output

```
4
```

Explanation

$S = \{abba\}$

The following strings can be derived by removing 2 characters from S: $ab, bb, ba, ab, ba, aa,$ and bb.

This gives us our set of *unique* beautiful strings, $B = \{ab, ba, aa, bb\}$. As $|B| = 4$, we print 4.

Submissions: 728

Max Score: 80

Difficulty: Hard

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Current Buffer (saved locally, editable) Java 7

```
1 import java.io.*;
2 import java.util.*;
3 import java.text.*;
4 import java.math.*;
5 import java.util.regex.*;
6
7 public class Solution {
8
```

```
    public static void main(String[] args) {
        /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution. */
    }
}
```

Line: 1 Col: 1

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