STEP 1   STEP 2   STEP 3   STEP 4   STEP 5 | THEORY   PRACTICE | SUBMIT   SUBMISSIONS   HACKS   STANDINGS   CUSTOM INVOCATION

ITMO Academy: pilot course » **Suffix Array** » **Step 5** » **Practice**

D. Borders

time limit per test: 2 seconds❓

memory limit per test: 512 megabytes

String t is a border of string s, if it is at the same time its suffix and prefix. For example, string $abbabba$ has three borders: $abba$, a and an empty string.

Given a string s, calculate total number of borders of all its substrings.

Input

First string holds string s ($1 \leq |s| \leq 400\,000$). The string consists of small english characters.

Output

Output single integer – total number of borders for all substrings of s.

Examples

input	Copy
ababb	

output	Copy
20	

input	Copy
hhya	

output	Copy
11	

input	Copy
aaazaaa	

output	Copy
50	

input	Copy
a	

output	Copy
1	