D. String

time limit per test: 2 seconds memory limit per test: 256 megabytes

input: standard input output: standard output

You are given a string s. Each pair of numbers l and r that fulfill the condition $1 \le l \le r \le |s|$, correspond to a substring of the string s, starting in the position l and ending in the position r (inclusive).

Let's define the function of two strings F(x,y) like this. We'll find a list of such pairs of numbers for which the corresponding substrings of string x are equal to string y. Let's sort this list of pairs according to the pair's first number's increasing. The value of function F(x,y) equals the number of non-empty continuous sequences in the list.

Its continuous sequences are:

- (1, 4)
- (4, 7)
- (9, 12)
- (1,4),(4,7)
- (4, 7), (9, 12)
- (1, 4), (4, 7), (9, 12)

Your task is to calculate for the given string s the sum F(s,x) for all x, that x belongs to the set of all substrings of a string s.

Input

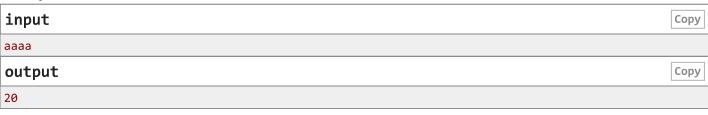
The only line contains the given string s, consisting only of small Latin letters $(1 \le |s| \le 10^5)$.

Output

Print the single number — the sought sum.

Please do not use the %Ild specificator to read or write 64-bit integers in C++. It is preferred to use the cin, cout streams or the %I64d specificator.

Examples





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input	Сору
abacabadabacaba	
output	Сору
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Note

In the first sample the function values at x equal to "a", "aa", "aaa" and "aaaa" equal 10, 6, 3 and 1 correspondingly.

In the second sample for any satisfying x the function value is 1.