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Problem K
String Rank
Time Limit: 0.5 Seconds

Let w and u be strings consisting of the English lowercase alphabet. We say that a string u is a subsequence of a string w if there exists a strictly increasing sequence of integers $i_1, \cdots, i_k$, where $|w| = n$, $|u| = k$ and $u[j] = w[i_j]$ for all $j = 1, \ldots, k$. Here, $v[i]$ denotes the i-th character of the string v. Let $w[i:]$ denote the suffix $w[i] \cdots w[n]$. If $i > n$, then $w[i:]$ is the empty string denoted by λ.

Given a nonempty string w and a positive integer k, we define the k-set of w to be the set $Q_k(w)$ of subsequences of w whose lengths are $0, 1, \cdots, k$. This implies that, for any string w, the empty string λ belongs to $Q_k(w)$ by definition.

For example, when $w = aaba$, we have $Q_3(aaba) = \{\lambda, a, b, ba, ab, aa, aba, aab, aaa\}$.

For a string w, we define the rank of w to be the minimum integer t such that the t-sets for all suffixes of w are all different. In other words, the rank of w is $\min\{t \geq 1 \mid Q_t(w[i:]) \neq Q_t(w[j:]), \forall 1 \leq i < j \leq n\}$.

For instance, when $w = aaba$, the 2-sets $Q_2(aba)$ and $Q_2(aaba)$ are equal. On the other hand, for $t = 3$, we have

$Q_3(\lambda) = \{\lambda\}$,
$Q_3(a) = \{\lambda, a\}$,
$Q_3(ba) = \{\lambda, a, b, ba\}$,
$Q_3(aba) = \{\lambda, a, b, ba, ab, aa, aba\}$,
$Q_3(aaba) = \{\lambda, a, b, ba, ab, aa, aba, aab, aaa\}$.

Therefore, the rank of the string $w = aaba$ is 3.

Given a string w, write a program to output its rank.

Input
Your program is to read from standard input. The input consists of a single nonempty string w, which consists only of lowercase characters from the English alphabet. The length of the string is at most 3×10^6.

Output
Your program is to write to standard output. Print exactly one line. The line should contain a positive integer to represent the rank t of the input string w.

The following shows sample input and output for four test cases.

Sample Input 1	Output for the Sample Input 1
aabbb	3

Sample Input 2	Output for the Sample Input 2
abacb	2

Sample Input 3	Output for the Sample Input 3
azadzzadaz	4

Sample Input 4	Output for the Sample Input 4
a	1