Unexpected Problem

Marc is young lover of strings who wants your help with the following problem. Given a string, s, of lowercase English alphabetic letters and an integer, m, calculate the number of string t's such that:

- Each t consists of lowercase English alphabetic letters
- $1 \leq length(t) \leq m$
- $s \cdot t = t \cdot s$, meaning their concatenation is commutative.

Print the number of string t's modulo $10^9 + 7$.

Input Format

The first line contains a string denoting s.
The second line contains an integer denoting m.

Constraints

- $1 \leq |s| \leq 5 \times 10^5$
- s consists of lowercase English alphabetic letters only (i.e., a to z).
- $1 \leq m \leq 2 \times 10^9$

Output Format

Print the number of string t's satisfying the conditions above, modulo $10^9 + 7$.

Sample Input

```
abc
6
```

Sample Output

```
2
```

Explanation

Given $s =$ `abc`, we have two possible string t's satisfying $1 \leq length(t) \leq m$ and $s \cdot t = t \cdot s$:

1. $t =$ `abc`
2. $t =$ `abcabc`.

Thus, we print 2 on a new line.