

Problem B. Finding Borders

Time limit 1000 ms

Mem limit 524288 kB

A *border* of a string is a prefix that is also a suffix of the string but not the whole string. For example, the borders of **ab***cabab***cab** are **ab** and **ab***cab*.

Your task is to find all border lengths of a given string.

Input

The only input line has a string of length n consisting of characters a–z.

Output

Print all border lengths of the string in increasing order.

Constraints

- $1 \leq n \leq 10^6$

Example

Input	Output
ab cabab cab	2 5