

Problem A. Magic String

Time limit 1000 ms

Mem limit 524288 kB

You are given a magical string that exhibits unique mirror patterns. A mirror pattern is a sequence that appears both at the start and end of the string but is not the full length of the string itself. Your task is to find all the lengths of these mirror patterns and present them in ascending order.. For example, `ab cab ab cab` The mirror patterns are `ab` and `ab cab`.

Input

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

Output

Print the lengths of all mirror patterns (if any) in increasing order. Print all border lengths of the string in increasing order.

Constraints

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

Example

Input	Output
ab cab ab cab	2 5