

# Longest Square Factor

Given a string  $x$ , the string obtained by concatenating  $x$  to itself is sometimes called the square of  $x$ .

Given a string  $s$ , output the longest string  $x$  such that its square is a substring of  $s$ . If you find more than one solution, output the lexicographically smallest.

## Input

The first and only line of input contains a string  $s$  (consisting only of lowercase letters of the english alphabet). The length of  $s$  is less than or equal to  $10^5$ .

## Output

To the first line of output print the length of the string  $x$ .

To the second line print the string  $x$ .

Such a string will always exist in the test data.

## Example

**Input:**

abcabc

**Output:**

3

abc