Problem K
Palindrome Partition

A palindrome is a string that reads the same forwards as backwards. For example, `radar`, `noon`, and `a` are palindromes, while `bathtub`, `thought`, and `is` are not.

Given a string S consisting only of lowercase English letters. You can rearrange the letters in S in any order you like. Your task is to split S after rearrangement into as few palindromic substrings as possible.

Input

The first and only line contains the string S ($1 \leq |S| \leq 200\,000$) containing lowercase English letters.

Output

On the first line, print the minimum number k of palindrome substrings.

On the next k lines, print the palindromes that the string S (after rearrangement) can be split into. If there are multiple ways to split, you may output any of them.

Sample Input 1	Sample Output 1

`larcevalecer`	`2`
	`level`
	`racecar`

Explanation of Sample 1: We can rearrange the input string into `levelracecar`, then split the string into two palindromes: `level` and `racecar`. No rearrangement can produce a single palindrome, so the minimum number of palindromes is 2.

Sample Input 2	Sample Output 2
`abab`	`1` `baab`

Sample Input 3	Sample Output 3

`indonesianationalcontest`	`8`
	`i`
	`incni`
	`stats`
	`nnn`
	`ala`
	`odo`
	`t`
	`eoe`

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