E Endurtaka Mig

Time limit: 3s

```python
while True:
    print("repetitionlegitimizes", end="")
```

Generator for a test case of this problem.

A certain Icelandic singer absolutely hates repeating himself. It seems tedious and not very interesting to him. This means each word he says is not equal to a string concatenated 2 or more times. Formally, he can say a word w, if w cannot be written as $s + s + \cdots + s$ (k times, with $k > 1$). So he cannot say "`hahaha`" (can be written as "`ha`" + "`ha`" + "`ha`"), but he can say "`endurtakamig`".[1] You are analyzing a sentence spoken by the singer. You only forgot to add spaces between the words, so you are looking for an optimal way to do so. What is the minimum number of words to split the string into, such that each word could have been spoken by this singer?

Input

The input consists of:

- One line with a string s ($1 \leq |s| \leq 3 \cdot 10^5$), the sentence spoken.

The sentence only consists of English lowercase letters (`a-z`), it does not contain spaces.

Output

Output the minimum number of words k in the sentence, followed by k strings which form a possible subdivision of the sentence into words.

If there are multiple valid solutions, you may output any one of them.

Sample Input 1	Sample Output 1
`hahaha`	`2` `hah aha`

Sample Input 2	Sample Output 2
`endurtakamig`	`1` `endurtakamig`

[1] The phrase "Endurtaka mig" is Icelandic for "Repeat myself".