

Prefix Compression



You are in charge of data transfer between two Data Centers. Each set of data is represented by a pair of strings. Over a period of time you have observed a trend: most of the times both strings share some prefix. You want to utilize this observation to design a data compression algorithm which will be used to reduce amount of data to be transferred.

You are given two strings, x and y , representing the data, you need to find the longest common prefix (p) of the two strings. Then you will send substring p , x' and y' , where x' and y' are the substring left after stripping p from them.

For example, if $x = "abcdefpr"$ and $y = "abcpqr"$, then $p = "abc"$, $x' = "defpr"$, $y' = "pqr"$.

Input Format

The first line contains a single string denoting x .
The second line contains a single string denoting y .

Constraints

- x and y will contain only lowercase Latin characters ('a'-'z').
- $1 \leq length(x), length(y) \leq 10^5$

Output Format

In first line, print the length of substring p , followed by prefix p . In second line, print the length of substring x' , followed by substring x' . Similar in third line, print the length of substring y' , followed by substring y' .

Sample Input 0

```
abcdefpr
abcpqr
```

Sample Output 0

```
3 abc
5 defpr
3 pqr
```

Sample Input 1

```
kitkat
kit
```

Sample Output 1

```
3 kit
3 kat
0
```

Sample Input 2

```
puppy
```

puppy

Sample Output 2

```
5 puppy
0
0
```

Explanation

Sample Case 0:

Already explained above in the problem statement.

Sample Case 1:

$p = \text{"kit"}$, which is also y . So x' will be "kat" and y' will be an empty string.

Sample Case 2:

Because both strings are the same, the prefix will cover both the strings. Thus, x' and y' will be empty strings.