

Problem C. Creating Strings

Time limit 1000 ms

Mem limit 524288 kB

Given a string, your task is to generate all different strings that can be created using its characters.

Input

The only input line has a string of length n . Each character is between a–z.

Output

First print an integer k : the number of strings. Then print k lines: the strings in alphabetical order.

Constraints

- $1 \leq n \leq 8$

Sample

Input	Output
aabac	20 aaabc aaacb aabac aabca aacab aacba abaac abaca abcaa acaab acaba acbba baaac baaca baca bcaaa caaab caaba cabaa cbaaa