

F. Erasing Substrings

time limit per test: 1 second

memory limit per test: 256 megabytes

input: standard input

output: standard output

You are given a string s , initially consisting of n lowercase Latin letters. After that, you perform k operations with it, where $k \geq 1$. During i -th operation you **must** erase some substring of length exactly 2^{i-1} from s .

Print the lexicographically minimal string you may obtain after performing k such operations.

Input

The only line contains one string s consisting of n lowercase Latin letters ($1 \leq n \leq 5000$).

Output

Print the lexicographically minimal string you may obtain after performing k operations.

Examples

input
adcbca
output
aba

input
abacabadabacaba
output
aabacaba

Note

Possible operations in examples:

- adcbca **adcba** aba;
- abacabadabacaba **abc**abadabacaba aaba**dab**acaba aabacaba.