Problem F

John is obsessed with security. He is writing a letter to his friend Brus and he wants nobody else to be able to read it. He uses a simple substitution cipher to encode his message. Each letter in the message is replaced with its corresponding letter in a substitution alphabet. A substitution alphabet is a permutation of all the letters in the original alphabet. In this problem, the alphabet will consist of only lowercase letters ('a'-'z').

For example, if John's message is "hello" and his cipher maps 'h' to 'q', 'e' to 'w', 'l' to 'e' and 'o' to 'r', the encoded message will be "qweer". If the cipher maps 'h' to 'a', 'e' to 'b', 'l' to 'c' and 'o' to 'd', then the encoded message will be "abccd".

Given the original message, determine the cipher that will produce the encoded string that comes earliest alphabetically. Return this encoded string. In the example above, the second cipher produces the alphabetically earliest encoded string ("abccd").

The first line of the input contains t, the number of test cases, followed by t lines. Each test case is represented by a string *message*.

Restrictions:

- If A and B are two Strings of the same length, then A comes earlier alphabetically than B if it contains a smaller character at the first position where the Strings differ.
- *message* will contain between 1 and 50 characters, inclusive.
- *message* will contain only lowercase letters ('a'-'z').

Example:

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Input:    Output:
1         abcdbefg
topcoder
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