

Problem A: Lex Successor

Consider all the positive integers with the fixed number of occurrences of d_i for each digit $i = 1 \dots 9$. Assume writing them down one by one in ascending order, like so: 225, 252, 522, 2025, 2052, \dots . Notice that the number of non-zero digits is fixed, but you can add zeroes. In this example, with 522 we ran out of 3-digit numbers with exactly 2 occurrences of “2” and 1 occurrence of “5”, so we had to add one zero. Given $n \leq 10^{20}$ – the last number you wrote in this sequence – your task is to find what is the next number.

Input

The input file starts with T , the number of test cases. Then T cases follow, each containing a single positive integer $n \leq 10^{20}$.

Output

For each test case, output Case x : y , where x is the number of the test case, and y is the successor of the corresponding n .

<i>Sample Input</i>	<i>Sample Output</i>
3	Case 1: 252
225	Case 2: 2206
2062	Case 3: 7434
7344	