Subsequence MEX

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Define a number b to be a subsequence of a number a if, when you write out a in decimal notation, you can erase some (but not all) of its digits so that the remaining digits, in order, form b. For example, 356 is a subsequence of 1234567, because you can erase the 1, 2, 4, and 7 to form 356. However, 0 is not a subsequence of 23527, because the digit 0 is not present in 23527.

You are given a number x. Find any number n such that the MEX of the set of all subsequences of n is equal to x. It can be shown that such an n always exists.

The MEX of a set of integers is defined as the smallest non-negative integer which does not occur in the set. For example, the MEX of $\{0, 1, 2, 4\}$ is 3, and the MEX of $\{1, 4, 6, 8\}$ is 0.

Input

The first line of the input contains a single integer t ($1 \leq t \leq 1000$) — the number of test cases. The description of the test cases follows.

Each test case consists of a single line containing an integer x ($1 \leq x < 10^{10000}$) — the desired MEX of the subsequences of n. It is guaranteed that x does not contain any leading zeroes.

It is guaranteed that the sum of the number of digits of x across all test cases is at most 10000.

Output

For each test case, output a single positive integer n — any number such that the MEX of its subsequences is x. n may not contain leading zeroes.

If there are multiple solutions, you may print any.

The sum of the number of digits of n across all test cases must not exceed 10^6.

Example

standard input	standard output
4 1 9 10 22	70 12836880457 2468013579 12013456789

Note

In the first sample case, the subsequences of 70 are 7, 0, and 70, and the MEX of $\{0, 7, 70\}$ is 1.

In the second sample case, 12836880457 contains every digit except 9, and therefore the MEX of its subsequences is 9.