

THE NAME OF THE COMPETITION
Details about the competition
Locality, day – day Month, year
Group C

Task C1. NEXT

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Recently Elly has a strange obsession. Every time she sees a non-negative integer A_i , she starts thinking what is the smallest strictly larger than it integer, such that it has no repeated digit in its decimal representation.

For example, if the initial number was 426661337, the integer that Elly wants is 426701358. Write a program that helps the girl in finding the desired numbers.

Input

On the first line of the standard input will be given an integer N – how many numbers your program should process. On each of the next N lines will be given a single non-negative integer A_i .

Output

For each number A_i print a line on the standard output, containing the smallest strictly larger than it integer, that does not contain a repeated digit. If there is no such integer, print -1 instead.

Constraints

- ❖ $1 \leq N \leq 100$
- ❖ $0 \leq A_i \leq 1,000,000,000,000$
- ❖ In 50% of the test cases $0 \leq A_i \leq 1,000,000$

Example

Input

```
4
42
10
424242424242
426661337
```

Output

```
43
12
-1
426701358
```