Task - Kick Start 12/07/22, 00:26

## Round A 2022 - Kick Start 2022

# Challenge Nine

PROBLEM ANALYSIS

#### Problem

Ada gives John a positive integer N. She challenges him to construct a new number (without leading zeros), that is a multiple of 9, by inserting *exactly* one digit (0...9) anywhere in the given number N. It is guaranteed that N does not have any leading zeros.

As John prefers smaller numbers, he wants to construct the *smallest* such number possible. Can you help John?

### Input

The first line of the input gives the number of test cases, T. T test cases follow.

Each test case has a single line containing a positive integer  ${f N}$ : the number Ada gives John.

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### Output

For each test case, output one line containing Case #x: y, where x is the test case number (starting from 1) and y is the new number constructed by John. As mentioned earlier, y cannot have leading zeros.

#### Limits

Memory limit: 1 GB.

 $1 \leq \mathbf{T} \leq 100.$ 

### Test Set 1

Time limit: 20 seconds.

 $1 \le \mathbf{N} \le 10^5$ .

### Test Set 2

Time limit: 10 seconds

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THIR HITH. 40 SECONDS.

For at most 10 cases:

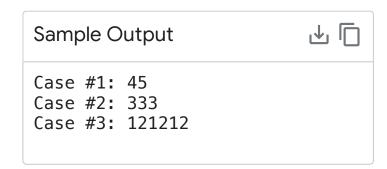
$$1 \le \mathbf{N} \le 10^{123456}$$
.

For the remaining cases:

$$1 \le \mathbf{N} \le 10^5$$
.

### Sample

Sample Input	<b>♣</b> □
3 5 33 12121	



In Sample Case #1, there are only two numbers that can be constructed satisfying the divisibility constraint: 45 and 54. John chooses the smaller number.

In Sample Case #2, 333 is the only number possible.

In Sample Case #3, there are four possible options - 212121, 122121, 121221 and 121212 - out of which the smallest number is 121212.