

Round 1B 2009

[A. Decision Tree](#)**B. The Next Number**[C. Square Math](#)[Contest Analysis](#)[Questions asked](#) **2**

Submissions

Decision Tree

10pt Not attempted
1512/1752 users
correct (86%)11pt Not attempted
1266/1544 users
correct (82%)

The Next Number

9pt Not attempted
2559/3329 users
correct (77%)26pt Not attempted
1890/2557 users
correct (74%)

Square Math

12pt Not attempted
157/422 users
correct (37%)32pt Not attempted
69/168 users
correct (41%)

Top Scores

ACRush	100
ftc	100
bmerry	100
andrewzta	100
ipknHama	100
halyavin	100
mystic	100
Yarin	100
Khuc.Anh.Tuan	100
dgozman	100

Problem B. The Next Number

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the [Quick-Start Guide](#) to get started.

Small input
9 points

Solve B-small

Large input
26 points

Solve B-large

Problem

You are writing out a list of numbers. Your list contains all numbers with exactly D_i digits in its decimal representation which are equal to i , for each i between 1 and 9, inclusive. You are writing them out in ascending order.

For example, you might be writing every number with two '1's and one '5'. Your list would begin 115, 151, 511, 1015, 1051.

Given N , the last number you wrote, compute what the next number in the list will be.

Input

The first line of input contains an integer T , the number of test cases in the input. T lines follow, one for each test case, each containing a single integer N .

Output

For each test case, output

Case #X: K

where X is the test case number, starting from 1, and K is the next integer in the list.

Limits

Small dataset

$$1 \leq T \leq 50$$
$$1 \leq N \leq 10^6$$

Large dataset

$$1 \leq T \leq 500$$
$$1 \leq N \leq 10^{20}$$

Sample

Input	Output
3	Case #1: 151
115	Case #2: 1105
1051	Case #3: 6323
6233	

