code jam
print "hello, world!"

Qualification Round 2016

A. Counting Sheep

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– Submissions

Counting Sheep

7pt	Not attempted **26558/29356 users** correct (90%)
8pt	Not attempted **25729/26216 users** correct (98%)

Revenge of the Pancakes

10pt	Not attempted **22527/23686 users** correct (95%)
10pt	Not attempted **21383/22147 users** correct (97%)

Coin Jam

10pt	Not attempted **13361/15342 users** correct (87%)
20pt	Not attempted **6297/9111 users** correct (69%)

Fractiles

10pt	Not attempted **8250/9708 users** correct (85%)
25pt	Not attempted **2356/4955 users** correct (48%)

– Top Scores

Lewin	100
Endagorion	100
xiaowuc1	100
xyz111	100
HellKitsune123	100
seanwentzel	100
ivan.popelyshev	100
burunduk3	100
Nicolas16	100
ctunoku	100

Practice Mode

[Contest scoreboard](#) | [Sign in](#)

Problem A. Counting Sheep

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 7 points	Solve A-small
Large input 8 points	Solve A-large

Problem

Bleatrix Trotter the sheep has devised a strategy that helps her fall asleep faster. First, she picks a number **N**. Then she starts naming **N**, 2 × **N**, 3 × **N**, and so on. Whenever she names a number, she thinks about all of the digits in that number. She keeps track of which digits (0, 1, 2, 3, 4, 5, 6, 7, 8, and 9) she has seen at least once so far as part of any number she has named. Once she has seen each of the ten digits at least once, she will fall asleep.

Bleatrix must start with **N** and must always name (i + 1) × **N** directly after i × **N**. For example, suppose that Bleatrix picks **N** = 1692. She would count as follows:

- **N** = 1692. Now she has seen the digits 1, 2, 6, and 9.
- 2**N** = 3384. Now she has seen the digits 1, 2, 3, 4, 6, 8, and 9.
- 3**N** = 5076. Now she has seen all ten digits, and falls asleep.

What is the last number that she will name before falling asleep? If she will count forever, print INSOMNIA instead.

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each consists of one line with a single integer **N**, the number Bleatrix has chosen.

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 last number that Bleatrix will name before falling asleep, according to the rules described in the statement.

Limits

1 ≤ **T** ≤ 100.

Small dataset

0 ≤ **N** ≤ 200.

Large dataset

0 ≤ **N** ≤ 10^6.

Sample

```
Input      Output

5          Case #1: INSOMNIA
0          Case #2: 10
1          Case #3: 90
2          Case #4: 110
11         Case #5: 5076
1692
```

In Case #1, since 2 × 0 = 0, 3 × 0 = 0, and so on, Bleatrix will never see any digit other than 0, and so she will count forever and never fall asleep. Poor sheep!

In Case #2, Bleatrix will name 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. The 0 will be the last digit needed, and so she will fall asleep after 10.

In Case #3, Bleatrix will name 2, 4, 6... and so on. She will not see the digit 9 in any number until 90, at which point she will fall asleep. By that point, she will have already

seen the digits 0, 1, 2, 3, 4, 5, 6, 7, and 8, which will have appeared for the first time in the numbers 10, 10, 2, 30, 4, 50, 6, 70, and 8, respectively.

In Case #4, Bleatrix will name 11, 22, 33, 44, 55, 66, 77, 88, 99, 110 and then fall asleep.

Case #5 is the one described in the problem statement. Note that it would only show up in the Large dataset, and not in the Small dataset.

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