



Practice Mode

AmrKeleg94@gmail.com | [Contest scoreboard](#) | [Sign out](#)

Round 1A 2008

[A. Minimum Scalar Product](#)[B. Milkshakes](#)**C. Numbers**[Contest Analysis](#)[Questions asked](#) 3**Submissions****Minimum Scalar Product**

5pt	Not attempted 2352/2567 users correct (92%)
10pt	Not attempted 1048/2336 users correct (45%)

Milkshakes

10pt	Not attempted 655/1042 users correct (63%)
25pt	Not attempted 312/432 users correct (72%)

Numbers

15pt	Not attempted 577/1925 users correct (30%)
35pt	Not attempted 96/364 users correct (26%)

Top Scores

Bohua	100
yuhch123	100
neal.wu	100
newman	100
Plagapong	100
Ahyangyi	100
Reid	100
Qingchun	100
ploh	100
kubus	100

Problem C. Numbers

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
15 points**Solve C-small**Large input
35 points**Solve C-large****Problem**

In this problem, you have to find the last three digits before the decimal point for the number $(3 + \sqrt{5})^n$.

For example, when $n = 5$, $(3 + \sqrt{5})^5 = 3935.73982\dots$ The answer is 935.

For $n = 2$, $(3 + \sqrt{5})^2 = 27.4164079\dots$ The answer is 027.

Input

The first line of input gives the number of cases, T . T test cases follow, each on a separate line. Each test case contains one positive integer n .

Output

For each input case, you should output:

Case #X: Y

where X is the number of the test case and Y is the last three integer digits of the number $(3 + \sqrt{5})^n$. In case that number has fewer than three integer digits, add leading zeros so that your output contains exactly three digits.

Limits
 $1 \leq T \leq 100$
Small dataset
 $2 \leq n \leq 30$
Large dataset
 $2 \leq n \leq 2000000000$
Sample

Input	Output
2	Case #1: 935

5 Case #2: 027
2

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