Round A APAC Test

A. Seven-segment Display

B. Super 2048

C. Addition

D. Cut Tiles

Questions asked

Submissions

Seven-segment Display

8pt Not attempted **159/2058 users** correct (8%)

14pt Not attempted **34/155 users** correct (22%)

Super 2048

6pt Not attempted **875/2084 users** correct (42%)

13pt Not attempted **667/858 users** correct (78%)

Addition

11pt Not attempted **29/689 users** correct (4%)

19pt Not attempted **11/26 users** correct (42%)

Cut Tiles

13pt Not attempted **30/576 users** correct (5%)

16pt Not attempted **22/29 users** correct (76%)

Top Scores

Prowindy	100
MRain	86
Dumbear2	86
Hao.Wu	84
Gyosh	71
LinKin	71
divanshu	70
Krooonal	70
dizem	59
LMH	57

Problem A. **Seven-segment Display**

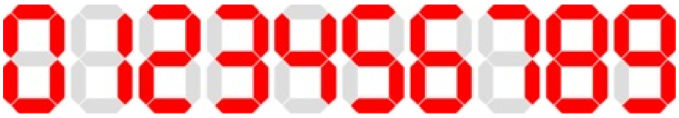
This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the Quick-Start Guide to get started.

Small input 8 points	Solve A-small
Large input 14 points	Solve A-large

Problem

Tom is a boy whose dream is to become a scientist, he invented a lot in his spare time. He came up with a great idea several days ago: to make a stopwatch by himself! So he bought a seven-segment display immediately.

The seven elements of the display are all light-emitting diodes (LEDs) and can be lit in different combinations to represent the arabic numerals like:

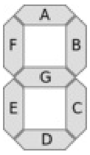


However, just when he finished the programs and tried to test the stopwatch, some of the LEDs turned out to be broken! Some of the segments can never be lit while others worked fine. So the display kept on producing some ambiguous states all the time...

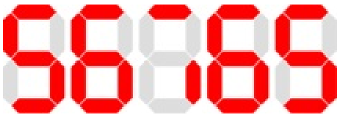
Tom has recorded a continuous sequence of states which were produced by the display and is curious about whether it is possible to understand what this display was doing. He thinks the first step is to determine the state which the display will show **next**, could you help him?

Please note that the display works well despite those broken segments, which means that the display will keep on counting down **cyclically** starting from a certain number (can be any one of 0-9 since we don't know where this record starts from). 'Cyclically' here means that each time when the display reaches 0, it will keep on counting down starting from 9 again.

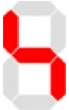
For convenience, we refer the seven segments of the display by the letters A to G as the picture below:



For example, if the record of states is like:



It's not that hard to figure out that ONLY segment B is broken and the sequence of states the display is trying to produce is simply "9 -> 8 -> 7 -> 6 -> 5". Then the next number should be 4, but considering of the brokenness of segment B, the next state should be:



Input

The first line of the input gives the number of test cases, **T**. Each test case is a line containing an integer **N** which is the number of states Tom recorded and a list of the **N** states separated by spaces. Each state is encoded into a 7-character string represent the display of segment A-G, from the left to the right. Characters in the string can either be '1' or '0', denoting the corresponding segment is on or off, respectively.

Output

For each test case, output one line containing "Case #x: y", where x is the test case number (starting from 1). If the input unambiguously determines the next state of the display, y should be that next state (in the same format as the input). Otherwise, y should be "ERROR!".

Limits

1 ≤ **T** ≤ 2000.

Small dataset

1 ≤ **N** ≤ 5.

Large dataset

1 ≤ **N** ≤ 100.

Sample

Input

```
4
1 1111111
2 0000000 0001010
3 0100000 0000111 0000011
5 1011011 1011111 1010000 1011111 1011011
```

Output

```
Case #1: 1110000
Case #2: ERROR!
Case #3: 0100011
Case #4: 0010011
```