

Round C APAC Test

[A. Minesweeper](#)

[B. Taking Metro](#)

C. Broken Calculator

[D. Tetris](#)

Questions asked 1

Submissions

Minesweeper

8pt	Not attempted 748/1510 users correct (50%)
14pt	Not attempted 703/741 users correct (95%)

Taking Metro

9pt	Not attempted 64/319 users correct (20%)
15pt	Not attempted 56/62 users correct (90%)

Broken Calculator

10pt	Not attempted 570/1000 users correct (57%)
16pt	Not attempted 385/544 users correct (71%)

Tetris

11pt	Not attempted 29/163 users correct (18%)
17pt	Not attempted 27/29 users correct (93%)

Top Scores

cebrusfs	100
LXZ	100
Kriiii	100
drazil	100
xing89qs	100
xhae	100
culaucon	100
whsb	100
jki14	100
zck921031	100

Problem C. Broken Calculator

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
10 points

Solve C-small

Large input
16 points

Solve C-large

Problem

Alice is a smart student who is very good at math. She is attending a math class. In this class, the teacher is teaching the students how to use a calculator. The teacher will tell an integer to all of the students, and the students must type that exact number into their calculators. If someone fails to type the number, he or she will be punished for failing such an easy task!

Unfortunately, at the beginning of the class, Alice finds that her calculator is broken! She finds that some of the number buttons are totally broken, and only the "multiply" and "equals" operator buttons are available to use. So she can only use these buttons to get the number quickly.

For instance, the teacher may say the number "60", while Alice's calculator can only type "1", "2" and "5". She could push the following buttons:

- Button "15" (2 clicks)
- Button "multiply" (1 click)
- Button "2" (1 click)
- Button "multiply" (1 click)
- Button "2" (1 click)
- Button "equals" (1 click)

This method requires 7 button clicks. However, if Alice uses "12*5=", only 5 clicks are needed. Of course Alice wants to get the integer as fast as possible, so she wants to minimize the number of button clicks. Your task is to help her find a way to get the required number quickly.

Input

The first line of the input gives a number **T**, the number of integers the teacher says. **T** test cases follow.

Each case contains two lines. The first line contains ten numbers each of which is only 0 or 1. the *i*th number (starting from 0) is "1" if the number *i* can be clicked, or "0" if it is broken. The second line contains only one number **X**, the integer the teacher tells everyone.

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 minimum number of button clicks needed, or "Impossible" if it is not possible to produce the number.

Limits

$1 \leq T \leq 100$.

Small dataset

$1 \leq X \leq 100$.

Large dataset

$1 \leq X \leq 10^6$.

Sample

Input	Output
3	Case #1: 5
0 1 1 0 0 1 0 0 0 0	Case #2: 4
60	Case #3: Impossible
1 1 1 1 1 1 1 1 1 1	
128	
0 1 0 1 0 1 0 1 0 1	
128	

The first sample case is explained in problem statement.

In the second case, all digits are available, so Alice can just press "1", "2", "8" and then "equals" to get the result. Please note that she still needs to press "equals" in the last step, even though there are no calculations.

For the last case, it's impossible since Alice cannot input any even numbers.

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