Problem 6: Minions Numbers System

Not only the language that the minions have, they also have their own number system! Humankind has the system call "Decimal" which contains the digits 0 – 9. But the minions' number system not only contains digits but also some characters. Our analysts discovered that such a minion has only three fingers so they cannot count like human. Therefore, they invent the minions' number system is "Mi6" there digits are i, 6, iM, ii, i6, 6M, 6i, 66, iMM and iMi which can interpret to decimal system from one to ten respectively. (Both human and minion's number systems cannot start with zero)

We need your guys to work with this minions' system by analyzing and transforming them from one system to another system.

INPUT

The first line of input gives the number of cases, *N* with follow by *N* test cases. Each case is formatted as:

minions_number source_system target_system

Source and target system shall be shown in the list of number which contains the ascending sorted digits from left to right. Furthermore, all of digits in the minions' system will be in the source system when each digits maybe 0 – 9, A – Z, a – z, even though the symbol !W#$%&'()*+,-./:;<=>?@[\]^_`{|}~

OUTPUT

For each case, output must be in one line which contain "Case #x" follow by (next line) the minions' number which translated from the source system to the target system

Limitation

$1 \leq N \leq 50$

SAMPLE

Input
5
7 0123456789 Mi6
6i Mi6 0123456789
1 0123456789 Mi6
Bello Bacelona 0123456789
CODE O!CDE? I?ST!.

Output

Case #1
6i
Case #2
7
Case #3
i
Case #4
1829
Case #5
SIT!