UCF "Practice" Local Contest — Aug 23, 2014

Lottery Coprimes

filename: `coprime`
(Difficulty Level: `Easy`)

Lou lost the lottery last week, but he still plans to buy a ticket for this week's draw. He's also buying tickets for all his relatives. They are all mathematicians (who understand probability) and would never buy tickets for themselves. Lou insisted that they each choose their own numbers. When he looked at the numbers, it appeared as though all of his relatives had played a joke on him. They seemed to choose numbers by picking a pair of coprime integers, concatenating them, then splitting the digits up into the number spots on the lottery ticket.

Two integers are called coprimes, or relative primes, if they do not share any positive factors greater than 1. (That's the joke—they are "relative" primes from his relatives.)

These are the lottery numbers from one of Lou's math-loving relative's tickets. The numbers 169 and 7203 are coprime.

The Problem:

Given a list of concatenated digits from a lottery ticket, determine whether this list can be split into two numbers which are coprimes. Note that the digits can not be reordered.

The Input:

The first line of input will contain only a single positive integer N, which is the number of lottery tickets to evaluate. Each of the next N input lines will contain 3 to 8 digits, representing a single ticket. Neither the first digit nor the last digit will ever be zero, and there will never be two consecutive zeroes. There will be no spaces or other characters on these lines, other than digits.

The Output:

For each ticket in the input, output "`Ticket #`*`T`*`:`", where *`T`* is the ticket number (starting at 1). On the next line, output the two coprimes found by splitting the digits for that ticket. Separate the numbers by at least one space. If no coprimes are found, output the message "`Not relative`" instead, since the numbers were probably not picked by any of Lou's relatives. If there are multiple possible ways to split the digits into coprimes, use the one in which the first number is the lowest. If the split occurs before a zero digit, you may omit this

leading zero when outputting the second number, i.e., you can output a number with leading zeroes with or without those zeroes.

Leave a blank line after the output for each ticket. Follow the format shown in Sample Output.

Sample Input:

```
4
47108
222
1697203
7203217
```

Sample Output:

```
Ticket #1:
47 108

Ticket #2:
Not relative

Ticket #3:
1 697203

Ticket #4:
72 3217
```