Google Code Jam '12 Qualification Round Problem C - Recycled Numbers

Time limit: 30.0s **Memory limit:** 1G

Do you ever become frustrated with television because you keep seeing the same things, recycled over and over again? Well I personally don't care about television, but I do sometimes feel that way about numbers.

Let's say a pair of distinct positive integers (n, m) is *recycled* if you can obtain m by moving some digits from the back of n to the front without changing their order. For example, $(12345, 34512)$ is a recycled pair since you can obtain 34512 by moving 345 from the end of 12345 to the front. Note that n and m must have the same number of digits in order to be a recycled pair. Neither n nor m can have leading zeros.

Given integers A and B with the same number of digits and no leading zeros, how many distinct recycled pairs (n, m) are there with $A \leq n < m \leq B$?

Input Specification

The first line of the input gives the number of test cases, T. T test cases follow. Each test case consists of a single line containing the integers A and B.

Output Specification

For each test case, output one line containing `Case #x: y`, where x is the case number (starting from 1), and y is the number of recycled pairs (n, m) with $A \leq n < m \leq B$.

Limits

Memory limit: 1GB.

Time limit: 30 seconds per test set.

$1 \leq T \leq 50$.

A and B have the same number of digits.

Test set 1

$1 \leq A \leq B \leq 1\,000$.

Test set 2

$1 \leq A \leq B \leq 2\,000\,000$.

Sample Input

```
4
1 9
10 40
100 500
1111 2222
```

Sample Output

```
Case #1: 0
Case #2: 3
Case #3: 156
Case #4: 287
```