Problem 4: The Voight-Kampff test

Blade Runner Rick Deckard has gone to Tyrell Corporation to identify its replicants. Rick must distinguish who is a replicant and who is human using a Voight-Kampff machine. (It is a sort of lie detector that measures contractions of the iris muscle and the degree of the empathic response of individuals through careful questions. How complicated...) Rick is so tired of it! Therefore, he will just pretend that he is making the Voight-Kampff test to all the individuals, while in fact he will only record some answers. Rick makes these assumptions: all humans and androids know who is what (because, at Tyrell Corporation, humans are genetic designers, and androids are smarter than Rick), humans always tell the truth, and androids always lie.

Consider the first example in the sample input, where Tyrell claims that Rachael is a replicant, and Rachael claims that Tyrell is a replicant. Under Rick's assumptions, there are exactly two situations consistent with these two claims: (1) Tyrell is human and Rachael is a replicant, and (2) Tyrell is a replicant and Rachael is human.

Entrada

Input consists of several cases. Each case begins with a line with an integer $2 \leq n \leq 1000$, n names (all different), and an integer $m \geq 0$. Follow m lines, each with an answer following exactly the format of the sample input. No individual speaks about (him/her/it)-self.

Salida

For every case, print a line with its case number and the number of situations consistent with the answers recorded and Rick's assumptions.

Ejemplo de entrada

```
2 Tyrell Rachael 2
Tyrell : Rachael is a replicant
Rachael : Tyrell is a replicant

2 Tyrell Rachael 2
Tyrell : Rachael is a replicant
Rachael : Tyrell is human

2 Tyrell Rachael 2
Rachael : Tyrell is human
Rachael : Tyrell is a replicant

4 Tyrell Rachael Sebastian Pris 5
Pris : Rachael is human
Tyrell : Rachael is a replicant
Rachael : Tyrell is a replicant
Pris : Tyrell is a replicant
Rachael : Pris is human
```

Ejemplo de salida

```
Case 1: 2
Case 2: 0
Case 3: 0
Case 4: 4
```

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