Problem F: Avatar Lifetimes



The Avatar is the human embodiment of the Avatar spirit, and the only person who can bend all four elements. When the Avatar dies, this spirit is reborn in a new Avatar, continuing the cycle. There is always exactly one Avatar at a time. There have been many Avatars over the years, with the most recent ones (such as Korra, Aang, Roku, and Kyoshi) having widely known dates of birth and death. The farther back in time we go, however, the more uncertain the identity of the Avatar becomes.

There are some mythical figures who are believed to have been powerful benders and *may* have been incarnations of the Avatar. Professor Zei is doing historical research into the Avatar cycle and would like help writing a program to determine if certain mythical figures may or may not have been an Avatar. If a figure's lifetime overlaps with that of a known Avatar, it's impossible for that figure themselves to be an Avatar (because only one exists at any time). If the figure's lifetime does not overlap any known Avatar's, it is possible they are an Avatar.

Years in the Four Nations are divided into years before the Air Nomad Genocide (BG) and years after this event (AG). 0 AG is the year this event occurred and the Hundred Year War began. Years ending in BG count backwards from this event and those ending in AG count forwards from it. So for instance Avatar Aang was born in 12 BG, the war began when he was 12 in 0 AG, and then he died in 153 AG when he was 165.

There is no conflict with one Avatar being born in the same year that the previous Avatar died, as the re-incarnation happens immediately.

Input

The first line of input contains an integer K, giving the number of known Avatars. Following that are K lines, each containing two years and the name of the Avatar, separated with commas. Each year contains an integer and either "BG" or "AG", separated with a space. The first year is the Avatar's birth year and the second is their death year. No input will have a death year which is before a birth year. No known Avatar will have a lifespan overlapping that of another known Avatar.

Following these lines is a blank line, followed by a line of information for the mythical figure in question. That line will contain the birth and death years and name, in the same format as described above.

Output

If the mythical figure's lifetime does not overlap that of any known avatar, you should output "No overlap". Otherwise you should print a line saying "Overlap: NAME" (replacing NAME with the name of the Avatar the figure's lifetime overlaps with). If the lifetime overlaps that of multiple Avatars, you should have such a line for each one, with them appearing in the same order as given to you in the input.

Sample Input 1

```
5
12 BG,153 AG,Aang
82 BG,12 BG,Roku
312 BG,82 BG,Kyoshi
415 BG,345 BG,Yangchen
643 BG,560 BG,Szeto

560 BG,517 BG,Salai
```

Sample Output 1

```
No overlap
```

Sample Input 2

```
5
12 BG,153 AG,Aang
82 BG,12 BG,Roku
312 BG,82 BG,Kyoshi
415 BG,345 BG,Yangchen
643 BG,560 BG,Szeto

362 BG,311 BG,Zalir
```

Sample Output 2

```
Overlap: Kyoshi
Overlap: Yangchen
```