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## 5. DVDs

**Program Name:** DVDs.java

**Input File:** dvds.dat

George is very particular (and peculiar) in the manner he stores his DVD collection. He has a series of three crates that were custom-built for his collection. He has named them ALPHA, BETA, and GAMMA. When he watches a DVD during the week, he removes it from the crate, watches it, and then puts it in a pile to be filed in his crates on the following Sunday. When he buys a new DVD, he watches it, and places in the pile with the other DVDs that he has watched and that will be filed on Sunday.

On Sunday, he places the DVDs that he watched during the week into the front of the ALPHA crate in the order he watched them beginning with the DVD he watch first. When ALPHA is full, he moves just enough DVDs from the back of ALPHA to the front of BETA so ALPHA will remain as full as possible. If BETA becomes full, he moves just enough DVDs from the back of BETA to the front of GAMMA so both ALPHA and BETA are always as full as possible. Each Sunday, when his filing is complete, all DVDs will be as far forward as possible.

Each of his three crates can contain at most 6 inches worth of DVD cases. Each case for a single DVD is 0.625 inches thick and each case for a two-disk DVD set is 0.875 inch thick. There will never be more DVDs than the three crates can hold.

George watches at least one DVD each week, and every Sunday he puts them back in the crate in the order he watched them beginning with the one he watched first. For example, consider the week where he watched the DVDs in the following order:

- Norbit
- Speed
- My Family: Season 2 (2)
- Ghost Rider
- King Kong

Since Norbit, My Family: Season 2 (2), and Ghost Rider were in the original list of DVDs, they are removed from their positions and all DVDs must be moved forward. Then, the viewed DVDs, including the new one, need to be placed at the front of crate ALPHA. The DVDs, beginning with the DVD at the very front of crate ALPHA will be in the order:

- King Kong
- Ghost Rider
- My Family: Season 2 (2)
- Speed
- Norbit

followed by Transformers and all of the remaining DVDs which have been moved toward the back with the order unchanged as described above.

You are to write a program to keep track of what position (first, second, third, etc.) and in which crate any DVD is located on each Sunday after all of the DVDs have been placed in the crates. Note: There may be some empty space at the end of one crate but not enough empty space to hold another DVD so it will be the first DVD in the next case.

### Input

The first line will contain a series of DVD titles that are in the crate at the beginning. The DVD titles will be separated by a comma and a space. DVD titles with a space and the number two (2) in parenthesis at the end of the title are two-disc DVD sets. All other DVDs are single DVDs. Notice that some lines in the actual file, including the first line, may appear on the printed page to be more than one line.

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The second line will contain a single integer  $n$  that indicates the number of weeks the program will be used. Each of the next  $n$  pairs of lines is considered to be a test case.

- The first line of each test case will have the titles of DVDs, separated by a comma and a space, that are one of two types. Either it is a DVD in the original list that needs to be removed from the crate where it is located so it can be viewed or it is a new DVD. In either case, the DVD will be viewed and then, on Sunday, placed in the front of the ALPHA crate as described above.
- The second line of each test case will have the name of a target DVD that George wishes to locate after all DVDs are placed in the crate.

### Output

On a single line for each week, you are to print the name of the crate in which the target DVD is located, a space, and the position of the target DVD within the crate in which it is located.

### Example Input File

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Transformers, Blades of Glory, Disturbia, 300, Spider-Man 3 (2), Ghost Rider,
TMNT, Star Trek Generations (2), My Family: Season 2 (2), Norbit, Because I
Said So, Eragon, Walk the Line, The Holiday, Grounded for Life Season 5 (2)
2
Norbit, Speed, My Family: Season 2 (2), Ghost Rider, King Kong
Eragon
Blades of Glory, Because I Said So, The Holiday, Grounded for Life Season 5
(2), Crash, Speed, Shark Tale, Curious George, Ice Age
King Kong
```

### Example Output to Screen

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BETA 5
BETA 1
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