

School Library

As a young developer Iskren is a part from software development school team. His task is to do online book library, but he needs your help for that.

On the first line you will receive a String, representing shelf with books in library. Every book is separated with "&".

On the next lines until you receive "**Done**" command, you will receive following commands:

- **Add Book | {book name}**
 - **Add** a book at **first place** in the shelf.
 - If the book **already is present** on the shelf, **ignore the command**.
- **Take Book | {book name}**
 - **Remove** the book with the given name only **if the book is on the shelf**, otherwise **ignore this command**.
- **Swap Books | {book1} | {book2}**
 - If both books **are on the shelf**, swap their places.
- **Insert Book | {book name}**
 - **Add** a book at the **end of the book collection**.
- **Check Book | {index}**
 - **Print** the name of the book on the given index the book.
 - If the index is **invalid**, **ignore the command**.

Input

- **On the 1st line**, you will receive a string, representing book names, separated with "&" .
- On the **next lines**, until you receive "**Done**", you will receive **commands** in the **format** described above.

Output

- Print the **collection** of books joined by ", ".
"{firstBook}, {secondBook}, ...{lastBook}"

Constraints

- You won't receive duplicate book names in the initial list of books.

Examples

Input	Output
Don Quixote&The Great Gatsby&Moby Dick&Hamlet Add Book The Odyssey Take Book Don Quixote Insert Book Alice's Adventures in Wonderland Check Book 3 Done	Hamlet The Odyssey, The Great Gatsby, Moby Dick, Hamlet, Alice's Adventures in Wonderland
Input	Output
Anna Karenina&Heart of Darkness&Catch-22& The Stranger Add Book David Copperfield Add Book One Thousand and One Nights Swap Books One Thousand and One Nights Catch-22 Take Book David Copperfield Insert Book The Stories of Anton Chekhov Check Book 17 Done	Catch-22, Anna Karenina, Heart of Darkness, One Thousand and One Nights, The Stranger, The Stories of Anton Chekhov