

Question Used in the Review Session

SHOULD'S OF THE SYSTEM

- The system should be able to keep track of all the books in the library,
- each book's unique identifiers,
- the genres associated with each book.
- it should be able to list all books belonging to a specific genre.

Requirements:

Book Information:

Each book has a unique ID (e.g., ISBN), a title, and belongs to one or more genres (e.g., "Fantasy", "Science Fiction", "Non-Fiction").

Catalog Features:

Add a Book: Add a new book to the catalog with its details.

Find Books by Genre: Given a genre, list all the books belonging to that genre.

Unique Genre List: Generate a list of all unique genres in the catalog.

Tasks:

Define the Book Class: Create a Book class with properties for ID, title, and genres. The genres can be represented as a `Set<String>` since a book can belong to multiple genres, but each genre should only appear once per book.

Create the Catalog:

Use a `Map<String, Book>` to keep track of all books, with the book's ID as the key and the book object as the value.

Use a `Map<String, Set<String>>` to map each genre to a set of book IDs that belong to that genre. This will help in efficiently finding books by their genre.

Implement the Catalog Features:

Add a Book: When adding a book, update both the book map and the genre map accordingly.

Find Books by Genre: Implement a method that takes a genre and returns a list of book titles belonging to that genre.

Unique Genre List: Implement a method to return a set of all unique genres in the catalog.