Assignment 2:

You are tasked with implementing a system to manage a library's book catalog. Create a Java program that uses lambda expressions and functional interfaces to perform various operations on the library's catalog.

Create a class **Book** with the following attributes:

- title (String): The title of the book.
- author (String): The author of the book.
- genre (String): The genre of the book.
- yearPublished (int): The year the book was published.

Define a functional interface **BookPredicate** with a single method boolean test(Book book) to filter books based on certain criteria.

Create a class **Library** that contains an ArrayList to store Book objects. Implement the following methods in the Library class:

- addBook(Book book): Adds a new book to the library's catalog.
- getBooks(BookPredicate predicate): Returns a list of books that satisfy the given predicate.
- removeBooks(BookPredicate predicate): Removes books from the catalog that satisfy the given predicate.

Implement three different **BookPredicate** lambda expressions to filter books:

- Filter books by a specific author.
- Filter books published after a given year.
- Filter books of a particular genre.

Create a **LibraryApplication** class with a main method to test the functionality. In the main method, demonstrate the following:

- **Create a library object and add multiple books to its catalog.**
- **Use the getBooks method with different predicates to filter and display books.**
- **Use the removeBooks method to remove books from the catalog based on a specific condition.**

Note: Ensure that the program handles scenarios where books are not found for filtering or when attempting to remove books that do not exist in the catalog. Also, consider using the **Comparator** interface to sort books in the library catalog for more advanced filtering options.