Assignment Title: Library Management System

Objective:
Create a simple library management system in Java that utilizes classes, objects, and enums to manage books and their genres.

Requirements:

1. Create an Enum `Genre`:

Define an `enum` called `Genre` with the following values:

- `FICTION`
- `NON_FICTION`
- `SCIENCE`
- `HISTORY`
- `FANTASY`
- `MYSTERY`

2. Create a Class `Book`:

Attributes:

- `String title`
- `String author`
- `Genre genre`
- `int publicationYear`

Constructor:

- Initialize all attributes through the constructor.

Methods:

- `void displayInfo()`: Print out the book's details in a readable format.

3. Create a Class `Library`:

Attributes:

- `ArrayList<Book> books`: A list to store `Book` objects.

Methods:

- `void addBook(Book book)`: Add a `Book` object to the `books` list.

- `void removeBook(String title)`: Remove a book from the list based on its title.
- `void displayAllBooks()`: Display details of all books in the library.
- `void displayBooksByGenre(Genre genre)`: Display books that belong to a specific genre.

4. In the `main` Method:

- Create an instance of `Library`.
- Add at least **five** different `Book` objects to the library.
- Demonstrate adding and removing books.
- Display all books in the library.
- Display books filtered by a specific genre.

Bonus Tasks (Optional):

- **Sorting:** Implement a method `void sortBooksByYear()` in the `Library` class that sorts the books based on their publication year.
- **Search:** Implement a method `Book searchBook(String title)` that searches for a book by its title and returns the `Book` object.

Submission Guidelines:

- Include all your `.java` files.
- Ensure your code is well-commented to explain the logic.
- Include screenshots of your program's output demonstrating each functionality.
- Zip the code with your name and Mat Number

Tips:

- **Enums in Java:**
  Enums are special classes that represent a group of constants. They are useful when you have a fixed set of related values.

```java
public enum Genre {
    FICTION,
    NON_FICTION,
    SCIENCE,
    HISTORY,
    FANTASY,
    MYSTERY
}
```

- **ArrayLists:**
  An `ArrayList` is a resizable array, part of the Java Collections Framework. It's useful for storing objects when you don't know the number of elements in advance.

```java
ArrayList<Book> books = new ArrayList<>();
```

- **Iterating Over an ArrayList:**
  You can use a for-each loop to iterate over elements.

```java
for (Book book : books) {
    book.displayInfo();
}
```

Sample Code Snippets:

Defining the Book class:

```java
public class Book {
    private String title;
    private String author;
    private Genre genre;
    private int publicationYear;

    public Book(String title, String author, Genre genre, int publicationYear) {
        this.title = title;
        this.author = author;
        this.genre = genre;
        this.publicationYear = publicationYear;
    }

    public void displayInfo() {
        System.out.println("Title: " + title
            + "\nAuthor: " + author
            + "\nGenre: " + genre
            + "\nPublication Year: " + publicationYear
            + "\n--------------------------");
    }

```

```
22      // Getters and setters (if needed)
23  }
```
