Task: Implement a Simple Library Management System

Description:

Your task is to create a simple Library Management System application using Java and JDBC. The application should allow users to perform CRUD operations (Create, Read, Update, Delete) on a database of books. Users should be able to add new books, view the list of existing books, update book information, and delete books from the database.

Requirements:

Create a MySQL database named "library" with a table named "books" to store book information. The "books" table should have the following columns:

id (INT, auto-increment, primary key)

title (VARCHAR)

author (VARCHAR)

genre (VARCHAR)

publication\_year (INT)

quantity (INT)

Implement a Java application that connects to the MySQL database using JDBC.

Implement methods to perform the following CRUD operations:

Create: Add a new book to the database.

Read: Retrieve and display the list of all books from the database.

Update: Update the information of an existing book in the database.

Delete: Remove a book from the database.

Use prepared statements to execute SQL queries and prevent SQL injection attacks.

Handle exceptions gracefully and display appropriate error messages to the user.

Provide a simple command-line interface (CLI) for users to interact with the application.

Ensure that the application is user-friendly and provides clear instructions for each operation.

Add basic validation to ensure that users provide necessary information when adding or updating books (e.g., title, author).

Implement basic error handling to handle cases such as invalid input or database errors.

Bonus Features (Optional):

Implement pagination or limit the number of books displayed per page to improve performance for large datasets.

Add sorting options to sort the list of books by title, author, genre, etc.

Implement search functionality to allow users to search for books by title, author, or genre.

Implement logging to record user actions and database transactions for auditing purposes.

Create a graphical user interface (GUI) using JavaFX or Swing to make the application more interactive and user-friendly.

Submission:

Submit your Java project as a GitHub repository or a ZIP file containing the source code and any necessary configuration files.

Include a README.md file with instructions on how to set up and run the application, details about the database schema, and any additional notes.