Library Management System

Testing

Date: 06/04/2025

Abdulrhman Ibrahim - 60101806

Bara Al Omari - 60300383

1. Introduction

1.1 Purpose

This Testing Document outlines the testing strategy, methodologies, and test cases for the Library Management System, a desktop JavaFX application. It defines the scope of testing activities conducted to ensure system reliability and correctness across key functionalities such as checkouts, returns, cataloging, member management, due date tracking, fines, and search. The document also details how the application is tested against potential security threats and edge cases to validate robustness and compliance with requirements.
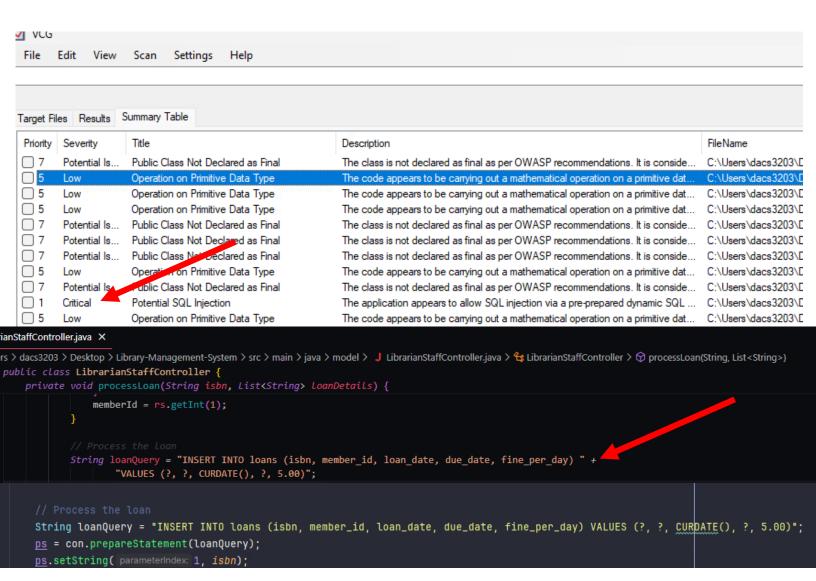
1.2 Methodologies & Tools

- Methodologies
  - SAST
  - DAST
- Tools:
  - Visual Coder Grepper

2. SAST

2.1 False Positive Alert:

- The program showed that there is a Critical issue in the code, but after revieing the code it was because of the "+" sign it detected it as a potential of SQLi.
- After fixing the code and removing the "+" sign, the alert is no more there.

Target Files   Results   Summary Table

Priority	Severity	Title	Description
7	Potential Is...	Public Class Not Declared as Final	The class is not declared as final as per OWASP recommendations. It is conside...
5	Low	Operation on Primitive Data Type	The code appears to be carrying out a mathematical operation on a primitive dat...
5	Low	Operation on Primitive Data Type	The code appears to be carrying out a mathematical operation on a primitive dat...
5	Low	Operation on Primitive Data Type	The code appears to be carrying out a mathematical operation on a primitive dat...
7	Potential Is...	Public Class Not Declared as Final	The class is not declared as final as per OWASP recommendations. It is conside...
7	Potential Is...	Public Class Not Declared as Final	The class is not declared as final as per OWASP recommendations. It is conside...
7	Potential Is...	Public Class Not Declared as Final	The class is not declared as final as per OWASP recommendations. It is conside...
5	Low	Operation on Primitive Data Type	The code appears to be carrying out a mathematical operation on a primitive dat...
7	Potential Is...	Public Class Not Declared as Final	The class is not declared as final as per OWASP recommendations. It is conside...
5	Low	Operation on Primitive Data Type	The code appears to be carrying out a mathematical operation on a primitive dat...
5	Low	Operation on Primitive Data Type	The code appears to be carrying out a mathematical operation on a primitive dat...
7	Potential Is...	Public Class Not Declared as Final	The class is not declared as final as per OWASP recommendations. It is conside...
7	Potential Is...	Public Class Not Declared as Final	The class is not declared as final as per OWASP recommendations. It is conside...
7	Potential Is...	Public Class Not Declared as Final	The class is not declared as final as per OWASP recommendations. It is conside...
7	Potential Is...	Public Class Not Declared as Final	The class is not declared as final as per OWASP recommendations. It is conside...
7	Potential Is...	Public Class Not Declared as Final	The class is not declared as final as per OWASP recommendations. It is conside...
5	Low	Operation on Primitive Data Type	The code appears to be carrying out a mathematical operation on a primitive dat...
5	Low	Operation on Primitive Data Type	The code appears to be carrying out a mathematical operation on a primitive dat...
5	Low	Operation on Primitive Data Type	The code appears to be carrying out a mathematical operation on a primitive dat...
5	Low	Operation on Primitive Data Type	The code appears to be carrying out a mathematical operation on a primitive dat...
5	Low	Operation on Primitive Data Type	The code appears to be carrying out a mathematical operation on a primitive dat...
7	Potential Is...	Public Class Not Declared as Final	The class is not declared as final as per OWASP recommendations. It is conside...

3. Functional Requirement Testing:

3.1 Admin Controller Test Cases:

Test Case ID	Description	Input	Expected Output
TC-A1	Creating new user with valid inputs	Username: john, Password: pass123, Role: Librarian	Success alert shown, user added to DB, user list updated
TC-A2	Create new users with missing fields	Username: ``, Password: pass123, Role: Librarian	Error alert: "Please fill all fields."
TC-A3	Create new user with all fields empty	Username: , Password: , Role: null	Error alert: "Please fill all fields."
TC-A4	View all users after creating users	None	ListView displays all users with usernames and roles
TC-A5	Logout as admin	Click "Logout"	Admin view closes, user redirected to login screen

3.2 Catalog Staff Controller:

Test Case ID	Description	Input	Expected Output
TC-C1	Add a new book with complete info	Title: "Java 101", Author: "Hussam Fetyan", ISBN: "978123213", Category: "TechBooks", Year: "2022"	Success alert, book inserted in DB
TC-C2	Add a new book with wrong isbn	Title: "Java 101", Author: "Hussam Fetyan", ISBN: "128123213", Category: "TechBooks", Year: "2022"	Error alert: "isbn must start with 978 or 979 followed by 10 digits"
TC-C3	Add book with missing title	Title: "", other fields valid	Error alert: "Please fill in all fields."
TC-C4	Edit book with correct input values	Title: "Java 101", Author: "Mark bob", ISBN: "978123213", Category: "TechBooks", Year: "2022"	Success alert, book updated in DB
TC-C5	Delete a selected book	Select a book and click delete	Success alert, book removed from DB
TC-C6	Try deleting with no selection	No book selected	Error alert: "Please select a book to delete."
	Automatic book	None	Table displays

	listing after any operation		updated list of books from DB

3.3 Librarian Staff Controller:

Test Case ID	Description	Input	Expected Output
TC-L1	Checkout book for a current member	Enter valid member ID and return due date, click checkout	Success message: "Book checked out successfully."
TC-L2	Checkout book for a new member	Enter member name, member phone, book return due date	Success message: "Book checked out successfully" New member is created
TC-L3	Checkout with missing fields	Leave return due date empty	Error message: "Please enter both member id and return due date."
TC-L4	Checkout with a member id that doesn't exist	Enter unknown member id with return due date	Error message: "Member not registered, please register first."
TC-L5	Return a book	Click on a book from the list that's checked out, click return	Success message: "Book returned successfully."
TC-C6	Automatic listing available books	None	Table displays books with their

			status
TC-C7	Logout as librarian	Click "Logout"	Librarian view closes, user redirected to login screen