Unit 2 Programming Assignment: Library System in Java

# Introduction

This Java program implements a basic library system that allows users to add books, borrow books, return books, and exit the application. It demonstrates the use of object-oriented programming principles and various control structures such as loops and conditionals to manage repetitive tasks.

# Code Explanation

The program uses a Book class to model each book with its title, author, and quantity. A HashMap stores all book records with the book title as the key. The program continuously displays a menu using a do-while loop and handles user input to perform operations. Invalid inputs are managed with try-catch blocks, ensuring robust exception handling.

# Use of Java Concepts

Looping structures such as do-while are essential in presenting the menu repeatedly until the user chooses to exit. This approach reflects the application of control structures as discussed by Eck (2022) in Chapter 3.3. The do-while loop ensures the menu displays at least once, and continues based on the user's input (Neso Academy, 2020a).  
Exception handling using try-catch blocks ensures that invalid input does not crash the program, improving robustness and maintainability, aligning with concepts from Chapter 3.7 of the textbook and the tutorial by Coding with John (2020).  
Break and continue statements, while not used in this program, are instrumental in controlling loop execution and can be useful in more complex iterations (Neso Academy, 2020b).

# References

Eck, D. J. (2022). \*Introduction to programming using Java, version 9, JavaFX edition\*. Licensed under CC 4.0.  
Coding with John. (2020, December 31). \*Exception handling in Java tutorial\* [Video]. YouTube.  
Neso Academy. (2020a, March 18). \*The Do-while loop in Java\* [Video]. YouTube.  
Neso Academy. (2020b, March 21). \*Break and continue keywords in Java\* [Video]. YouTube.