**Programming Assignment Unit 2**

import java.util.Scanner;

public class LibrarySystem {

// Arrays to store book titles, authors, and quantities

private static String[] titles = new String[100];

private static String[] authors = new String[100];

private static int[] quantities = new int[100];

private static int bookCount = 0; // Counter to keep track of the number of books in the library

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

int option;

do {

// Display menu options

System.out.println("\nWelcome to the Library System!");

System.out.println("1. Add Books");

System.out.println("2. Borrow Books");

System.out.println("3. Return Books");

System.out.println("4. Exit");

System.out.print("Choose an option: ");

option = scanner.nextInt();

// Switch case to perform actions based on user input

switch (option) {

case 1:

addBooks(scanner); // Call method to add books

break;

case 2:

borrowBooks(scanner); // Call method to borrow books

break;

case 3:

returnBooks(scanner); // Call method to return books

break;

case 4:

System.out.println("Exiting the program..."); // Exit the program

break;

default:

System.out.println("Invalid option! Please choose again."); // Invalid option

break;

}

} while (option != 4); // Repeat until user chooses to exit

scanner.close();

}

// Method to add books to the library

private static void addBooks(Scanner scanner) {

System.out.println("\nAdding Books...");

System.out.print("Enter the book title: ");

String title = scanner.next();

System.out.print("Enter the author: ");

String author = scanner.next();

System.out.print("Enter the quantity: ");

int quantity = scanner.nextInt();

// Check if the book already exists in the library

int index = findBook(title);

if (index != -1) {

// If yes, update the quantity

quantities[index] += quantity;

System.out.println("Quantity updated for existing book: " + title);

} else {

// If no, add the book to the library

titles[bookCount] = title;

authors[bookCount] = author;

quantities[bookCount] = quantity;

bookCount++;

System.out.println("New book added: " + title);

}

}

// Method to borrow books from the library

private static void borrowBooks(Scanner scanner) {

System.out.println("\nBorrowing Books...");

System.out.print("Enter the book title: ");

String title = scanner.next();

System.out.print("Enter the number of books to borrow: ");

int quantity = scanner.nextInt();

int index = findBook(title);

if (index != -1 && quantities[index] >= quantity) {

quantities[index] -= quantity;

System.out.println("Successfully borrowed " + quantity + " books of " + title);

} else {

System.out.println("Error: Book not available in sufficient quantity.");

}

}

// Method to return books to the library

private static void returnBooks(Scanner scanner) {

System.out.println("\nReturning Books...");

System.out.print("Enter the book title: ");

String title = scanner.next();

System.out.print("Enter the number of books to return: ");

int quantity = scanner.nextInt();

int index = findBook(title);

if (index != -1) {

quantities[index] += quantity;

System.out.println("Successfully returned " + quantity + " books of " + title);

} else {

System.out.println("Error: Book does not belong to the library system.");

}

}

// Method to find a book in the library

private static int findBook(String title) {

for (int i = 0; i < bookCount; i++) {

if (titles[i].equalsIgnoreCase(title)) {

return i;

}

}

return -1;

}

}

This Java program implements a simple library system that allows users to add books to the library, borrow books from the library, and return books to the library. It uses arrays to store information about the books, including titles, authors, and quantities. The program displays a menu of options to the user, and based on the user's choice, it executes the corresponding action. The program continues to display the menu and prompt the user for input until the user chooses to exit.