Programming Assignment Unit 2

Godfrey Ouma

University of the People

CS 1102: Programming 1

Ruth Alabi

November 30, 2023

```java
package textio;

import java.util.*;

class Book {
    String title;
    String author;
    int quantity;

    public Book(String title, String author, int quantity) {
        this.title = title;
        this.author = author;
        this.quantity = quantity;
    }
}

public class LibrarySystem {
    private static HashMap<String, Book> library = new HashMap<>();

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        boolean exit = false;

        while (!exit) {
            System.out.println("\nLibrary System Menu:");
            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("Enter your choice: ");
            int choice = scanner.nextInt();
            scanner.nextLine(); // Consume newline character

            switch (choice) {
                case 1:
                    addBooks(scanner);
                    break;
                case 2:
                    borrowBooks(scanner);
                    break;
                case 3:
                    returnBooks(scanner);
                    break;
                case 4:
                    exit = true;
                    break;
                default:
                    System.out.println("Invalid choice. Please enter a valid option.");
            }
        }
    }

    private static void addBooks(Scanner scanner) {
        System.out.println("\nAdd Books:");
        System.out.print("Enter book title: ");
        String title = scanner.nextLine();
        System.out.print("Enter book author: ");
        String author = scanner.nextLine();
        System.out.print("Enter quantity: ");
```

```
        int quantity = scanner.nextInt();

        Book book = library.getOrDefault(title, new Book(title, author, 0));
        book.quantity += quantity;
        library.put(title, book);

        System.out.println("Book added/updated successfully.");
    }

    private static void borrowBooks(Scanner scanner) {
        System.out.println("\nBorrow Books:");
        System.out.print("Enter book title: ");
        String title = scanner.nextLine();
        System.out.print("Enter number of books to borrow: ");
        int numBooks = scanner.nextInt();

        if (library.containsKey(title)) {
            Book book = library.get(title);
            if (book.quantity >= numBooks) {
                book.quantity -= numBooks;
                library.put(title, book);
                System.out.println("Books borrowed successfully.");
            } else {
                System.out.println("Requested number of books not available.");
            }
        } else {
            System.out.println("Book not found in the library.");
        }
    }

    private static void returnBooks(Scanner scanner) {
        System.out.println("\nReturn Books:");
        System.out.print("Enter book title: ");
        String title = scanner.nextLine();
        System.out.print("Enter number of books to return: ");
        int numBooks = scanner.nextInt();

        if (library.containsKey(title)) {
            Book book = library.get(title);
            book.quantity += numBooks;
            library.put(title, book);
            System.out.println("Books returned successfully.");
        } else {
            System.out.println("Book not found in the library.");
        }
    }
}
```

Console

```
Library System Menu:
1. Add Books
2. Borrow Books
3. Return Books
4. Exit
Enter your choice: 1

Add Books:
Enter book title: The River and Between
Enter book author: Ngugi wa Thiong'o
Enter quantity: 10
Book added/updated successfully.

Library System Menu:
1. Add Books
2. Borrow Books
3. Return Books
4. Exit
Enter your choice: 2

Borrow Books:
Enter book title: Gifted Hands
Enter number of books to borrow: 1
Book not found in the library.

Library System Menu:
1. Add Books
2. Borrow Books
3. Return Books
4. Exit
Enter your choice: 3
```