

## Assignment → 4

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```
import java.io.*;
import java.util.*;

class Book implements Comparable<Book> {
    int BookID;
    String title;
    String author;
    String category;
    boolean isIssued;

    public int compareTo(Book other) {
        return this.title.compareTo(other.title);
    }

    void validateId() throws InvalidException {
        if (BookID <= 0) {
            throw new InvalidException();
        }
    }

    void displayBookDetails() {
        System.out.println("ID: " + BookID);
        System.out.println("Title: " + title);
        System.out.println("Author: " + author);
        System.out.println("Category: " + category);
        System.out.println("Status: " + (isIssued ? "Issued" : "Available"));
        System.out.println("-----");
    }

    class InvalidException extends Exception {
        InvalidException() {
            System.out.println("Error: Book ID must be a positive number.");
        }
    }
}
```

```
class LibraryManager {
    Scanner sc = new Scanner(System.in);
    ArrayList<Book> books = new ArrayList<>();
    void addBook() {
        try {
            System.out.println("Enter Book ID:");
            int id = sc.nextInt();
            sc.nextLine();
            System.out.println("Enter Book Title:");
            String title = sc.nextLine();
            System.out.println("Enter Author:");
            String author = sc.nextLine();
            System.out.println("Enter Category:");
            String category = sc.nextLine();
            System.out.println("Enter");
            Book obj = new Book();
            obj.bookID = id;
            obj.title = title;
            obj.author = author;
            obj.category = category;
            obj.isIssued = false;
            obj.validateID();
            books.add(obj);
            saveToFile(obj);
            System.out.println("Error: Invalid input. Please");
            System.out.println("Book added and saved to file");
            System.out.println("successfully!");
        } catch (InvalidIDException e) {
            System.out.println("Error: Invalid input. Please Enter number");
            System.out.println("for ID.");
        }
    }
}
```

3  
catch (InvalidIDException e) {

3  
catch (Exception e) {

System.out.println("Error: Invalid input. Please Enter number  
for ID.");

```
Void mainMenu() {
    while (true) {
        System.out.println("==== City Library Management System ===");
        System.out.println("1. Add Books");
        System.out.println("2. Search Books");
        System.out.println("3. Sort Books");
        System.out.println("4. Exit");
        System.out.print("Enter your choice: ");
        int n = sc.nextInt();
        if (n == 1) {
            addBook();
        }
        if (n == 2) {
            showBookDetails();
        }
        if (n == 3) {
            sortBooks();
        }
        if (n == 4) {
            System.out.println("Exiting System. Thank You!");
            break;
        }
    }
}
```

```
class Assign4 {
    public static void main(String[] args) {
        LibraryManager obj1 = new LibraryManager();
        obj1.mainMenu();
    }
}
```