Personal Library Management System

By **Bidhi**

Python and Django course
Assigned by Prashant Sir

Skillshikshya Pvt. Ltd
Siddhartha marga, Kathmandu
3/17/2025

Table Of Contents

Introduction

A **Personal Library Management System** is a tool designed to help individuals organize and manage their personal book collections. Whether you're a book lover, student, or collector, this system offers a structured way to keep track of your books.

Additionally, you may change book data like the title, author, or ISBN if necessary, and search for books by title or author using case-insensitive capabilities for convenience. By utilizing their ISBN, the system also lets you take books out of your library.

Built using Python, this system follows object-oriented programming (OOP) principles for a clean and modular design. By utilizing a JSON file for data storage, it ensures your library information is preserved between sessions, making it a dependable tool for personal use.

Literature review

The idea of a personal library management system is consistent with the more general domain of information organization and digital library administration. Numerous tools and methods have been created over time to assist people and organizations in managing collections of books, papers, and other resources. The underlying ideas, current solutions, and technical developments pertinent to the creation of a personal library management system are examined in this study of the literature.

1. **Digital management library system**
   The personal library management system draws inspiration from these larger systems but focuses on simplicity and usability for individual complex database management and user authentication.

2. **Data storing**
   The system uses JSON (JavaScript Object Notation) for storing book data, making it a lightweight, human-readable, and efficient solution for managing personal collections.

3. **Search and Retrieval functionality**
   Search and functionality are a crucial feature of any library system, enabling users to quickly and efficiently locate books in their collection. This functionality is designed to be intuitive and user-friendly ensuring that users can find books based on specific criteria, such as title or author.

Methodology

The development of the **Personal Library Management System** follows a structured methodology to ensure a functional, user-friendly, and efficient system.

1. **Add books**

The system prompts the user to enter details about the books (e.g., title, author, ISBN, genre, publication year, etc.).
Input collection- The system prompts the user to enter details about the book.
Data validation -Validate the input to ensure it meets certain criteria (e.g. publication year should be a valid number.
Storage – Stores the book details in a data structure and using a JSON file the system appends the new book to the existing file.

2. **View books**
   This helps the user to view all the books and their details that are stored in this system.
   Retrieve data – Fetch the list of books from the storage.
   Display data – Displays the details of the books in a readable format.

3. **Update books**
   It also allows the user to update the information about the books.

4. **Remove**
   This feature removes the book the book when it is no longer needed for the user.
   Identify the book – Ask the user for ISBN or the title of the book they want to remove.
   Search and remove – Search for the book in the library and remove if it is found.

5. **Search by title-** This feature allows the user to search books by its title, making it effective and quick way to relocate the books.
   Input collection – Ask for the user to enter details about the book.
   Search logic – Search through the library to find books that match the title.
   Display result – Display the results of the matching book (if found).

Reference

- **Python Software Foundation.** (n.d.). *Python documentation*. Retrieved from https://docs.python.org/
- **W3Schools.** (n.d.). *Python JSON*. Retrieved from https://www.w3schools.com/python/python_json.asp

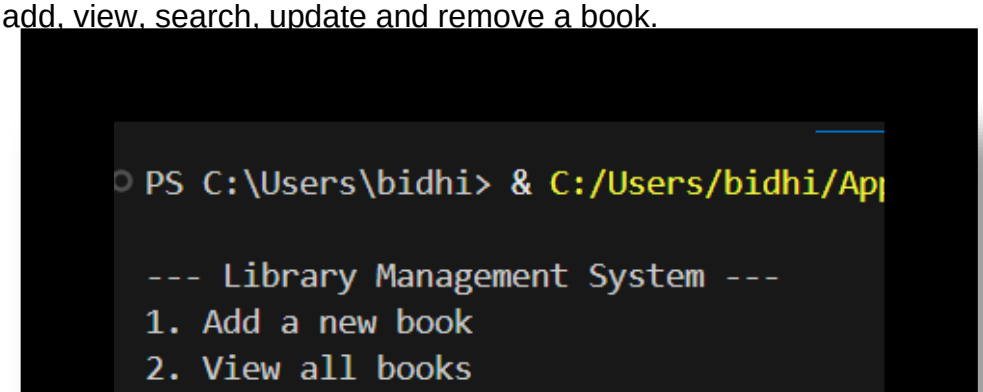
- **Stack Overflow.** (n.d.). *How to Use JSON in Python*. Retrieved from https://stackoverflow.com/questions/2344138/how-to-use-json-in-python

Technologies Used

- **Programming Language:** Python
- **Data Storage:** JSON (for storing book information, user records, and transactions)
  Libraries/Modules: [e.g., json, os]
- **Development Tools:** [e.g., VSCode]

Result

This is an output of the library management project. The below functions allow users to add, view, search, update and remove a book.



Conclusion

This Library Management System automates essential library functions, improving efficiency and user experience. By leveraging Python and JSON, the system is both lightweight and effective for small to medium-sized libraries.