

# **PROJECT REPORT**

ASSISGNMENT-3

TITLE- Library Inventory Manager

NAME-ARPIT PATNI

CLASS –BTECH CSE(AI-ML)

ROLL NO.-2501730111

SECTION-A

SUBMITTED TO- Dr. Sameer Farooq

## Introduction:

The objective of the assignment was to implement a structured, modular Python-based application using Object-Oriented Programming (OOP), JSON file handling, exception management, logging, and a menu-driven Command Line Interface (CLI). The project was developed and executed using Jupyter Notebook and demonstrates the practical abilities needed for Python application development.

**OOP Structure**

The project is organized into two core classes:

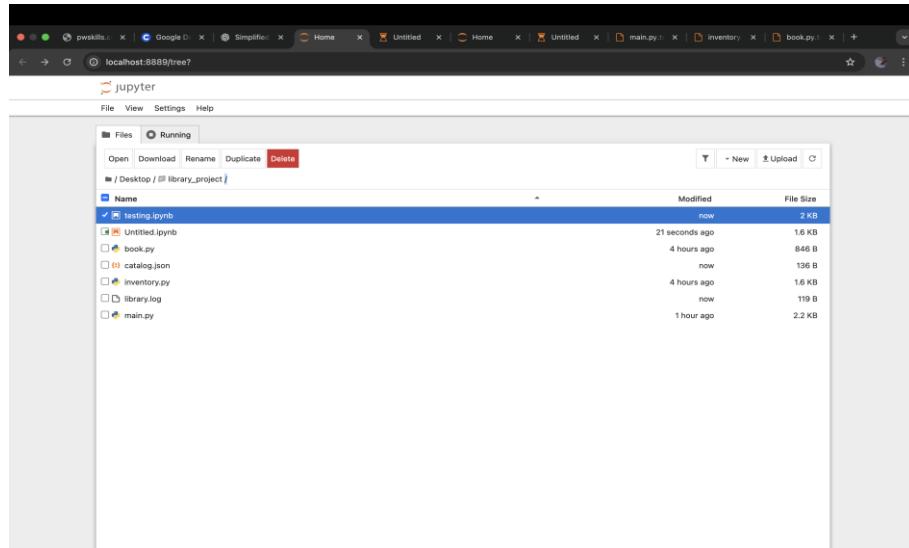
1. Book Class Handles book attributes (title, author, ISBN, status) and includes methods for issuing, returning, and converting book objects to a dictionary format.
2. Library Inventory Class Manages the entire book collection, supports adding books, searching, viewing all books, and saving/loading the collection using JSON.

**JSON File Handling** The system uses catalog.json to store book data. Every time a book is added, issued, or returned, the file updates automatically. The program safely loads data upon startup using a try-except block to handle corrupted or missing files.

**Logging** Python's logging module records major actions in library.log. This helps track system activity, debug errors, and maintain a record of user interactions.

**Program Outputs (Screenshots)** Below are the execution outputs captured during testing.

### Screenshot 1: Book Class Execution



### Screenshot 2: CLI Menu with Add Book

```
[2]: from book import Book
      b = Book("Test Book", "Test Author", "0001")
      print(b)

      Test Book by Test Author | ISBN: 0001 | Status: available

[=]: from main import menu
      menu()

===== Library Inventory Manager =====
1. Add Book
2. Issue Book
3. Return Book
4. View All Books
5. Search Book
6. Exit
=====
Enter your choice: 1
Enter title: Harry Potter
Enter author: J.K. Rowling
Enter ISBN: 1111
Book added successfully!
=====
1. Add Book
2. Issue Book
3. Return Book
4. View All Books
5. Search Book
6. Exit
=====
Enter your choice: [ ]:
```

Conclusion Assignment 3 successfully demonstrates practical Python development through OOP design, file handling, user interaction, and modular coding principles. The system is fully functional and reliable, handling different operations like adding, issuing, returning, and searching books. The use of JSON ensures data persistence, and logging provides traceability. This project showcases strong understanding of programming logic, data structures, and real-world application needs. It also reinforces good software practices such as modular organization, exception handling, and clean interface design. GitHub Repository Link: <https://github.com/arpitpaatni2007-jpg/Python-assisgnments/tree/main/Assisgnment-3> Commit History: <https://github.com/arpitpaatni2007-jpg/Python-assisgnments/commits?author=arpitpaatni2007-jpg>