

README – Mini Library Management System

This Mini Library Management System is a Python-based console application designed to manage basic library operations such as adding books, registering members, borrowing, returning, and deleting records.

1. Project Structure

The project contains the following files:

- operations.py – contains all the main functions and data structures.
- demo.py – demonstrates how the system works using sample data.
- tests.py – includes assert-based unit tests to verify function correctness.
- Design_Rationale_Mini_Library_System.pdf– explains design choices.
- README.pdf – this guide.

2. Requirements

You need Python 3 installed on your computer. No external libraries are required.

3. How to Run the Program

1. Place all files in the same folder.
2. Open a terminal or command prompt in that folder.
3. Run the demo file to see the system in action:

```
python demo.py
```

4. You should see output showing books and members being added, borrowed, and returned.

4. How to Run the Tests

To verify all functions are working correctly, run:

```
python tests.py
```

If everything is correct, you'll see:

```
All tests passed successfully!
```

5. Features Implemented

- Add, update, and delete books.
- Add and delete members.
- Borrow and return books.
- Prevent duplicate entries and invalid genres.
- Handle borrowing limits (maximum 3 books per member).
- Validate availability before borrowing or deletion.

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This project demonstrates the practical use of Python's data structures – lists, tuples, and dictionaries – to build a simple yet functional library management system.