Digital Library Management System

Objective:

The aim of this project is to help students understand Python programming, especially Object-Oriented Programming (OOP) concepts through a real-world application. Students will design a digital library system where they can add, search, borrow, and return books.

Tools Required:

- Python (Core Concepts)
- Command Line Interface (CLI)

Key Concepts Covered:

- Classes & Objects
- Encapsulation
- Data Management using Dictionaries and Lists
- Real-Life Problem Simulation

Project Overview:

You will design a digital library system where multiple books can be stored. Each book will have a title, author name, book ID, and the number of available copies. Users will be able to search for books, borrow them, and return them.

Main Components:

1. Book
   - Title

- Author
- Book ID
- Total Copies
- Available Copies

2. Library
   - Stores book records
   - Provides search features
   - Manages borrowing and returning

3. User
   - Borrows and returns books
   - Provides name when borrowing a book

Features:

1. Add New Book
2. Search Book by Title
3. Search Book by Author
4. Borrow Book
5. Return Book
6. Borrowed Book Records
7. Book Availability Check

Expected Output Format:

Menu-driven interface on the console:

Welcome to Digital Library System

1. Add Book

2. Search by Title

3. Search by Author

4. Borrow Book

5. Return Book

6. View All Books

7. Exit

Optional Advanced Features:

- Due Dates and Fine Calculation

- Book Categories

- Admin Login System

- Data Persistence using JSON or text files

Submission Requirements:

- .py Python file

- Output Screenshots

- Optional: Project Report in Word or PDF

Learning Outcomes:

- Learn how to solve real-world problems using code

- Understand and apply OOP in Python

- Handle user interactions in a program

- Practice code structuring and logic building

Final Note:

This project is designed to strengthen your understanding of Python and OOP. Use your creativity to make it more powerful. Advanced students may attempt to add a GUI using Tkinter.

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