Project Report: Bookstore REST API

The Bookstore REST API is a web-based project developed to demonstrate CRUD (Create, Read, Update, Delete) operations using Flask and SQLite. The purpose of this project is to allow users to manage a collection of books efficiently, with functionality to add new books, edit details, delete records, and search existing ones. This project simulates a real-world bookstore management system, providing both backend and frontend interfaces.

Abstract

The project integrates Flask (for backend development), SQLite (for database management), and HTML/CSS/JavaScript (for frontend interface). The REST API ensures seamless communication between the frontend and backend while handling requests like adding new books, fetching the list of books, updating details, and deleting books. This project highlights the practical implementation of RESTful services and full-stack development in a simplified, student-friendly manner.

Tools Used

1. **Python**: Programming language used for backend logic.
2. **Flask**: Lightweight Python web framework used to build REST APIs.
3. **Flask-SQLAlchemy**: ORM (Object Relational Mapper) for database integration.
4. **SQLite**: Lightweight database used for storing book details.
5. **HTML, CSS, JavaScript**: Frontend technologies to create user-friendly interfaces.
6. **GitHub**: For version control and project hosting.

Steps Involved in Building the Project

1. **Project Setup**: Created a virtual environment and installed required libraries such as Flask and SQLAlchemy.
2. **Database Design**: Designed the database schema using SQLite with fields like book ID, title, author, and price.
3. **Backend Development**: Implemented Flask routes for CRUD operations (/books, /books/<id>).
4. **Frontend Development**: Created an interface using HTML, CSS, and JavaScript to interact with the API.
5. **Integration**: Connected frontend with backend using fetch API calls.
6. **Testing**: Verified CRUD functionalities — adding, editing, deleting, and searching books.
7. **Deployment**: Project uploaded to GitHub for version control and demonstration.

Conclusion

The Bookstore REST API project successfully demonstrates the development of a full-stack application combining frontend, backend, and database. Through this project, I gained practical experience in REST API design, database handling, and full-stack integration. It also improved my understanding of deploying projects on GitHub, managing requirements with requirements.txt, and using version control effectively. This project serves as a strong foundation for future learning in full-stack development, cloud deployment, and microservices architecture.