

## Books Buying and Selling Web Application Using Django

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**Abstract**—In the digital age, our project stands as a testament to innovation, offering a cutting-edge e-commerce platform powered by Django. This dynamic web application redefines the way we buy and sell books, providing users with a seamless experience. It boasts a secure payment infrastructure, an extensive array of book categories, and employs sophisticated algorithms to deliver tailored book recommendations. Going beyond conventional e-commerce, our platform excels in integrating with external systems through a RESTful API, aligning perfectly with the ever-evolving needs of online book enthusiasts.

The project is a response to the surging demand for hassle free book shopping, addressing the constraints of traditional brick-and-mortar bookstores and enabling users to access a world of reading materials from the comfort of their digital devices. It represents a transformative leap in the world of online book commerce. Through advanced algorithms, our platform goes a step further by delivering personalized book recommendations, enhancing the user experience. This project not only meets but anticipates the growing demand for a hassle-free and comprehensive online book marketplace, ultimately reshaping the way we interact with literature in the digital age. It's a testament to the power of innovation in the world of online book commerce.

**Index terms**— Software Engineering, Django, HTML, CSS, SDLC, Python, Testing

### I. INTRODUCTION

In this era of digitalization, the availability of different resources on different digital devices is making our lives easy and convenient. In the field of academics too, there are many educational websites that share educational resources like short notes, video lectures, presentations and books etc. But, none of them provide class notes or question papers related to courses taught in a particular college or university; and most of the students due to lack of communication from batch mates or seniors, often face the problem of not getting class notes, if were absent or previous year question papers from seniors.

Taking these problems under consideration, the idea of an online platform for resource sharing purposes was developed named Shreic (Sharing Resources In Campus). The idea is to provide all class notes and previous year question papers of different courses of a college/university at a single platform. Also, in colleges after completion of the course, students either sell their books to junkyards or few of them donate it to their juniors.

Only a few of them keep those books with themselves. So, the website also works like an e-commerce website where old books can be sold or donated as per the wish of the seller. The project is developed in the Django framework. The backend consists of Python, Django, SQLite and Jinja2. Cloudinary, an

online cloud service has been used for storing data. Finally, black box and white box testing were done in order to test the functional, structural and logical features of the website.

The development process followed the Iterative Model of Software Development. The idea was to add functionality and then to design it, test it and implement it. Although this approach takes more resources but with each iteration the next iteration takes less time to be developed and with the help of this approach, errors were easily found and rectified at the same time.

### II. METHODOLOGY

Establishing a methodology for this research paper involves outlining the approach taken to achieve the objectives laid out in the study. the methodology encompasses several key steps.

#### A. Literature Review

Various websites and research papers have been developed keeping the idea of educational resource sharing and its importance in mind. Few of them are listed here:

1. Used Books Factory: It is an online platform to sell old books of different categories.
2. Vioric-Torri, C. & Alexandrache, C. (2012): The study reflects how educational technology influences the learning styles of students and how to form and develop the competences of learning in the new generations.
3. TutorialsPoint: The website provides tutorials on different topics related to computer science and technology. Provides pdf notes for the same and also provides guidance for competitive exams.
4. The Physics Classroom: For PDF notes and tutorials related to the various fields of Physics.
5. Kelly, L., & Breault, K. (2006): The objective of the research project was to provide the Australian Museum with guidance on how to best develop a website that meets the needs of students and teachers in the primary and secondary levels across a range of curriculum areas. General objectives were to gain insights into how students and teachers are using the internet and what they are looking for when they access websites.
6. Aglasem: Online Portal that provides previous year question papers and answer keys related to different competitive exams and some universities" semester papers.
7. BHU Student Club: It is an online social group that provides old semester papers of a few courses that are offered at Banaras Hindu University.

After a brief study of the related works, it has been observed that all these websites possess different functions of the project proposed but none of them have all of the features collectively.

Also, there is no such website where sharing class notes can be done except for social media. The following project has been developed keeping all these disadvantages in mind.

## B. Proposed Approach

Software Development Life Cycle SDLC is a process that defines the various stages involved in the development of software for delivering a high-quality product. SDLC stages cover the complete life cycle of software i.e. from inception to retirement of the product.

The purpose of SDLC is to deliver a high-quality product which is as per the customer's requirement. SDLC has defined its phases as Requirement gathering, Designing, Coding, Testing, and Maintenance. It is important to adhere to the phases to provide the Product in a systematic manner.

SDLC Model A software life cycle model is a descriptive representation of the software development cycle. The software development model helps the developer to select a strategy to develop the software.

A software development model has its own set of tools, methods and procedures, which are expressed clearly and defines the software development life cycle. This project has been developed using the Iterative model (Jalote, 2003).

## C. Requirements

Certain goals regarding the efficiency of the project to be developed were also proposed, which are as follows:

- **Planned Approach:** The working of the website is well planned and organized. The data will be stored properly in data stores, which will help in the retrieval of information as well as its storage.
- **Accuracy:** The level of accuracy in the proposed system will be higher. All operations would be done correctly and it ensures that whatever information is retrieved or stored is accurate.
- **Reliability:** The reliability of the proposed system will be high due to the above stated reasons. The reason for the increased reliability of the system is that now there would be proper storage of information.
- **No Redundancy:** In the proposed system utmost care would be taken so that no information is repeated anywhere, in storage or otherwise. This would assure the economic use of storage space and consistency in the data stored.
- **Immediate retrieval of information:** The main objective of the proposed system is to provide quick and efficient retrieval of information regarding users, orders, products etc.
- **Easy to Operate:** The system should be user-friendly and should be such that it can be developed within a short period of time and fit in the limited budget of the organization.

## III. SYSTEM ANALYSIS

An examination of the present digital landscape exposes the challenges posed by scattered communication tools, isolated data repositories, limited collaborative features, privacy apprehensions, and user complexities prevalent in current systems dedicated to book buying and selling. In contrast, the

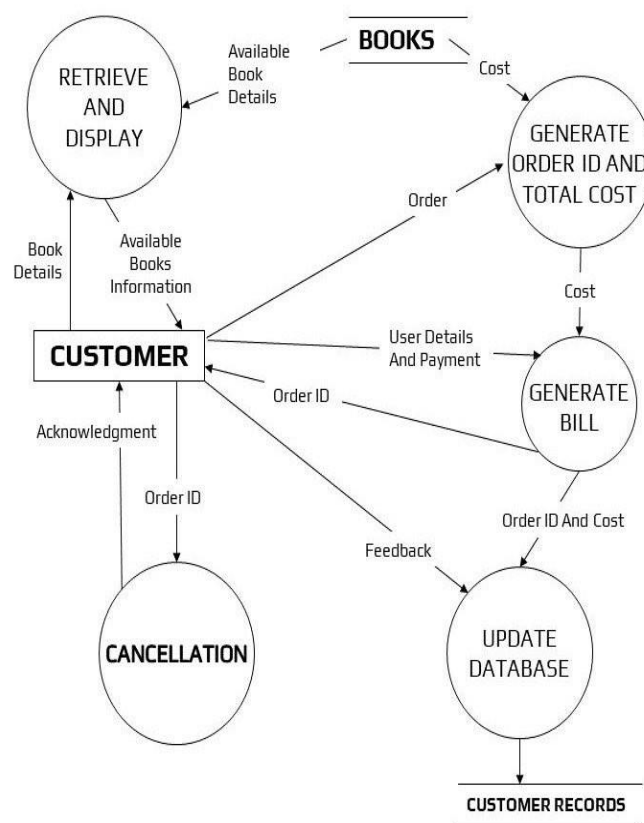
proposed architecture for the Books Buying and Selling Web Application using Django foresees a radical transformation.

This web-based platform architecture emphasizes improved accessibility, streamlined user interactions, seamless cooperation, and compatibility across various devices. The envisioned system aims to consolidate disparate digital services into a unified, user-centric framework, eliminating fragmentation and empowering users with an integrated, efficient, and secure digital marketplace.

## IV. SYSTEM ARCHITECTURE

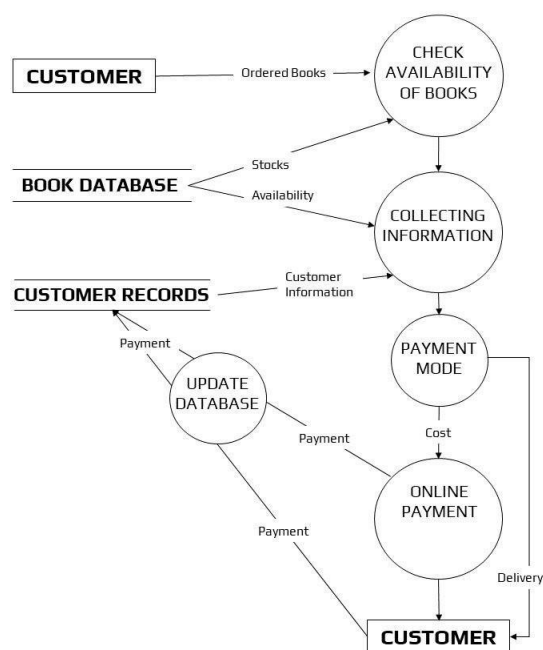
The architectural framework for the Books Buying and Selling Web Application using Django embodies a multi-layered structure encompassing frontend interfaces, Django-powered web application servers, backend services, database servers, external service integrations, and a robust security infrastructure.

This framework serves as the groundwork for a comprehensive digital marketplace, providing users with diverse functionalities such as book listings, transactions, user interactions, and secure data storage.



**First Level Data flow Diagram**

Fig 1: Level 1 Data flow Diagram



Second Level Data flow Diagram

Fig 2: Level 2 Data flow Diagram

## V. SYSTEM DESIGN

### A. System Modules

1) *Administration and Management Module*: This module encompasses tools tailored for system administrators, facilitating system configuration, user management, monitoring, and reporting capabilities.

2) *User Management Module*: Functions within this module revolve around user-centric functionalities such as registration, authentication, authorization, and password management.

3) *Content Management Module*: This module is dedicated to content-related operations including uploading, categorization, browsing, editing, version control, permissions, and sharing capabilities.

4) *Application Hub Module*: Enabling the launch, management, and switching between web-based applications, this module houses an application catalog within the system.

5) *Communication and Collaboration Module*: This module focuses on functionalities like messaging, chat, notifications, and collaborative tools, fostering real-time user engagement.

### B. Module Description

#### User Management Module:

Serving as the backbone of the Books Buying and Selling Web Application using Django, the User Management Module ensures a seamless user experience. It handles user registration, authentication, and authorization processes, allowing secure account creation, profile management, access control, and password-related functions. It emphasizes robust data security measures, including features like two-factor authentication and

account recovery mechanisms. By centralizing user management, this module ensures a secure and tailored user journey throughout the application ecosystem.

#### Content Management Module:

Facilitating efficient content interaction, the Content Management Module empowers users to upload, categorize, store, and share diverse content types. It includes functionalities for content browsing, editing, version control, and permissions management, promoting a collaborative and organized content environment. It emphasizes content security by providing granular access control, enabling secure content sharing while preserving data integrity and confidentiality.

#### Application Hub Module:

At the core of user engagement, the Application Hub Module provides access to various web-based applications within the application ecosystem. Users can seamlessly launch, manage, and switch between integrated applications through an application catalog. This module streamlines the installation, updating, and removal processes of applications, offering a unified interface for multiple functionalities. It enhances user convenience by minimizing separate installations, ensuring a cohesive user experience.

#### Communication and Collaboration Module:

Essential for real-time interaction, this module offers a suite of features vital for user engagement. It incorporates messaging functionalities for both individual and group-based conversations, integrated notification systems, and collaboration tools like shared calendars and collaborative document editing. It prioritizes user engagement, connectivity, effective communication within the application environment.

#### Administration and Management Module:

Catering to system administrators, this module empowers them to oversee and govern the entire application ecosystem. It includes functionalities for system configuration, user management, monitoring, logging, and reporting. Administrators can configure system settings, manage user roles, monitor performance, track activities, and generate comprehensive reports. By providing robust administrative controls, this module ensures efficient functioning, security, and governance of the Books Buying and Selling Web Application using Django.

## VI. RESULTS AND DISCUSSION

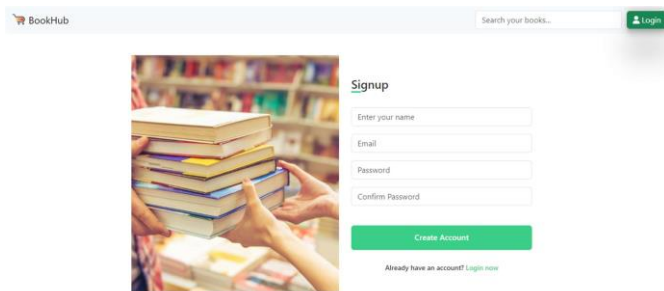


Fig 3: Signup Screen

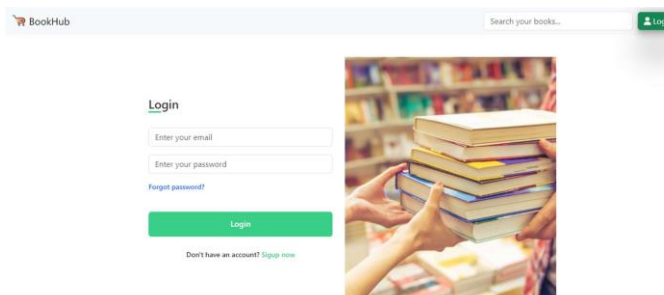


Fig 4: Login Screen

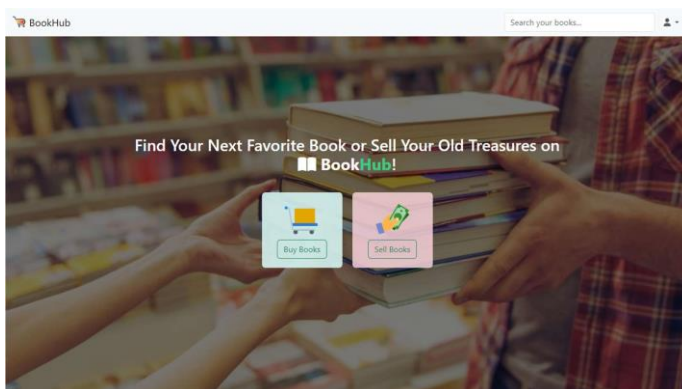


Fig 5: Home Screen

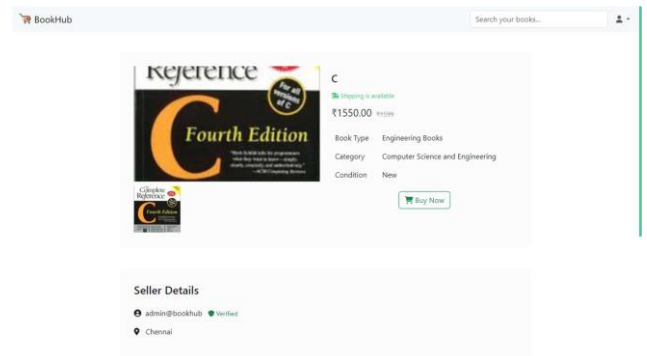


Fig 6: Product Page

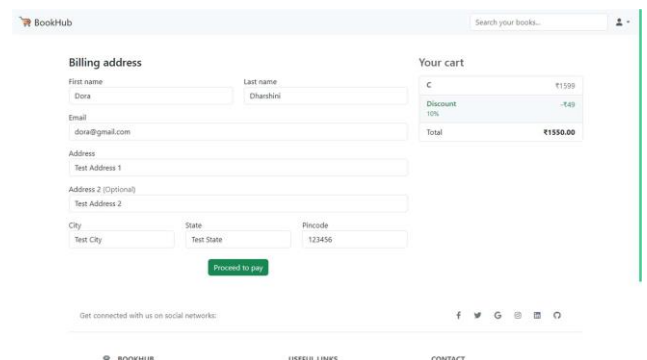


Fig 7: Billing Page

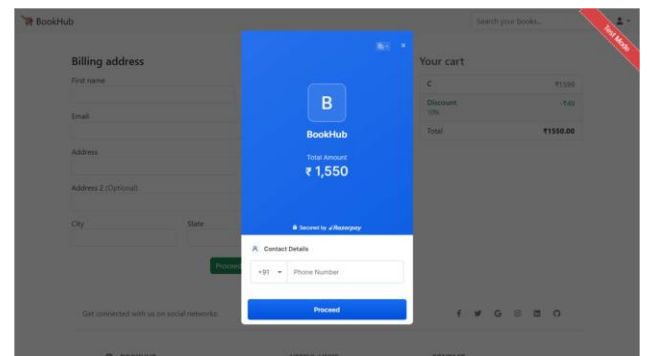


Fig 8: Payment Page

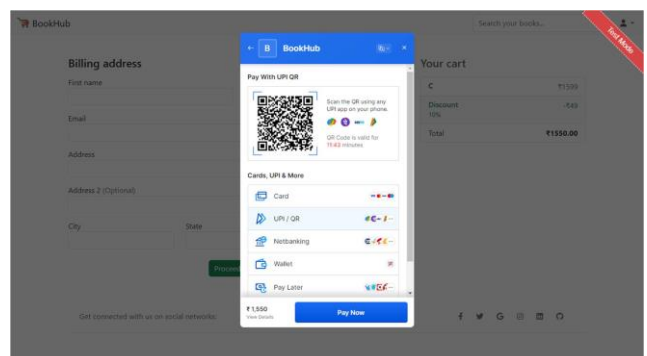


Fig 9: Payment Methods



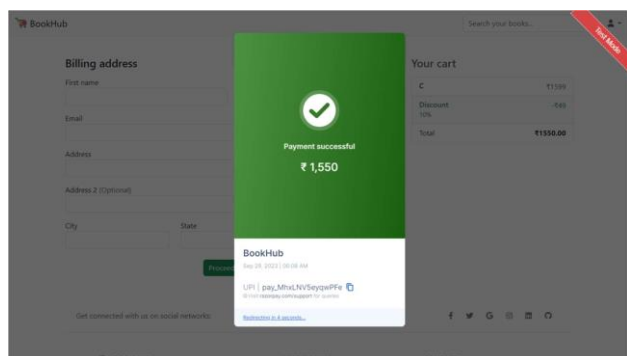


Fig 10: Payment Success

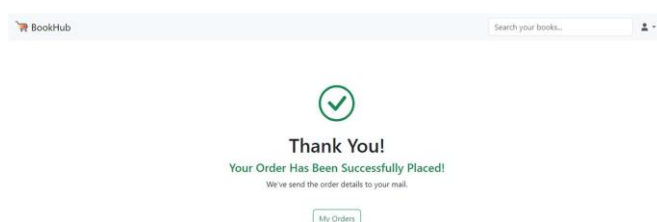


Fig 11: Order Placed

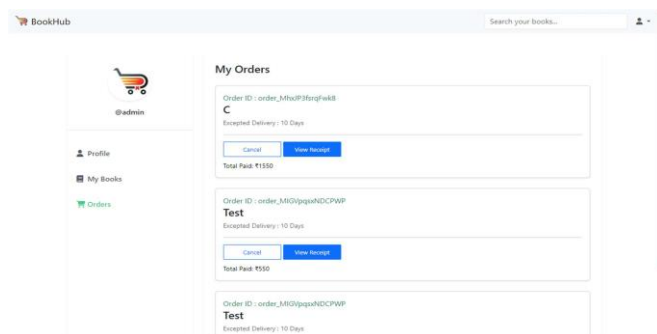


Fig 12: My orders

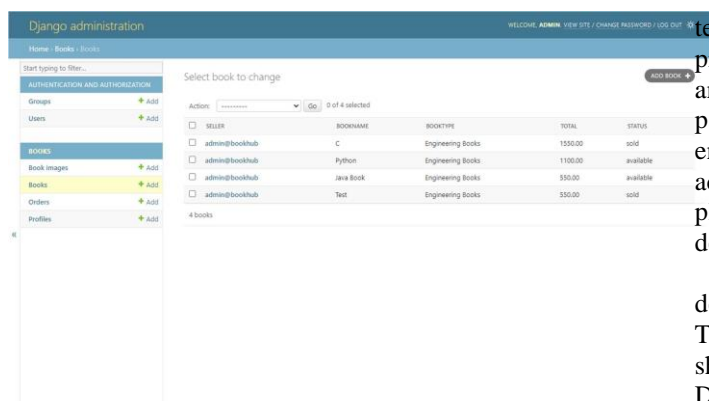


Fig 13: Books Database

## VII. CONCLUSIONS

After analyzing the results obtained, the project developed can be considered satisfiable. It can be concluded that the website will be very helpful to students in their educational life as it provides all educational resources required in a college or school life. As the project works as an Educational cum E-Commerce Website and thus students can donate or sell their old books too. To conclude, the project is developed using the proper Software Engineering process, following the Iterative Model of SDLC. A Project Control List was created after doing the feasibility study for functionalities as well as non-functional requirements.

Then proper schema and tables that were supposed to be required in the development process were made and relationships between each table were drawn. For this ER Diagram was made which has been illustrated in the paper. Also, the flow chart was created so that each process can be done sequentially. After that, each task from the project control list was coded, tested using White Box Testing and implemented separately as per the Iterative Model.

At last every unit was integrated and users were selected for Black Box Testing. Each user was asked to run the project and test each functionality of the project. After the testing, feedback and suggestions were recorded and accordingly the amendments were made. Security issues were resolved with the help of CSRF tags given by the Django Framework and by deploying the Web Application behind HTTPS.

The approach used in the System Development Model can act as a roadmap for the development of similar kinds of Web Applications efficiently. Also, for future works few more features can be added to the project. Some of them that have been enlisted are using the platform as an online assignment submission platform, creation of a chatroom consisting of teachers and students of particular university/college and adding digital payment methods for easier transaction.

## ACKNOWLEDGMENT

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Furthermore, we extend our thanks to the academic and technological community for their pioneering contributions, providing the foundational support crucial to the development and success of this innovative initiative. Their encouragement, patience, and belief in our vision have been a source of strength, enabling us to overcome challenges and stay dedicated to achieving our goals. Their support has been invaluable and has played a pivotal role in the success of this endeavor. We are deeply grateful for their unwavering support and understanding.

The success of this ambitious venture reflects the collective dedication and support of each individual and entity involved. Their invaluable contributions have been indispensable in shaping the 'Books Buying and Selling Web Application using Django' as a transformative force in the realm of online book commerce, promising a more accessible and efficient book-buying experience for all users.

We acknowledge and appreciate the collaborative efforts that have made this endeavor a success, marking it as a significant milestone in the evolution of digital commerce and customer-centric innovation.

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