Green University of Bangladesh

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GUB Online Book Store

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Chapter 1

Introduction

1.1 Overview

GUB Bookstore is an online system designed particularly for Green University of Bangladesh students in a way that they can conveniently and securely buy new academic books directly from the official stock of the university. There are two levels of access to the users: students and administrators. Students can surf through the available books, compare prices, and place orders, while the administrators will handle order approvals, inventory control, and maintaining stock of books. This system makes sure students receive the correct and current materials prescribed for their classes, all through a dependable system run by the university.

1.2 Motivation

The idea for the GUB Bookstore was born out of the increasing demand for a methodical platform through which students are able to buy books directly as per their registered courses. The students are most often left clueless about where they can acquire appropriate editions of books or even if books are available. A single platform centrally governed under the umbrella of Green University removes such a problem, ensuring students have around-the-clock access to officially suggested new books independent of external suppliers or previous versions. This project is intended to simplify book availability for students and inventory management easier for the university.

1.3 Problem Definition

1.3.1 Problem Statement

Green University of Bangladesh does not as yet possess a dedicated online bookstore from which students can purchase new books directly from the approved list of books at the university. Students hence navigate a hassle of not knowing where to access the right books, obtaining the outdated versions, or navigating pricing misfits. To the

above ends, the GUB Bookstore will serve as an authorized online portal that bridges the student community with approved lists of books that are provided directly from the university.

1.3.2 Complex Engineering Problem

Creating this system poses some administrative and technical challenges, such as:

- Develop a centralized inventory system to track books and quantities.
- Implement a secure login system for enrolled students to place orders.
- Create an approval process for administrators to review orders.
- Enable real-time stock updates during order placement and delivery.
- Design a simple, responsive interface for student access across devices.
- Ensure scalability to handle high demand during peak periods, like new semesters.

1.4 Design Goals/Objectives

The primary objective of the GUB Bookstore is to provide an easy-to-use, university-endorsed online platform for students to purchase required books. The primary design objectives are:

- **User-friendly design:** Easy interface for students to order books.
- **Administrative control:** Admins manage orders, stock, and reports.
- **Secure login:** Restricted access for students and admins.
- **Inventory tracking:** Real-time alerts for orders and shipments.
- **Responsiveness:** Works on desktop with Local Host

1.5 Application

The GUB Bookstore has the potential to expand in the future with features such as pre-ordering textbooks before each semester, offering discounted bundles for multiple books, and providing digital copies alongside physical editions for greater convenience. Additionally, the system could serve as a template platform for other departments within Green University, enabling them to efficiently manage and distribute their own materials.

Chapter 2

Design/Development/Implementation of the Project

2.1 Introduction

The **GUB Online Book Store** is an interactive web-based platform developed for the students of Green University of Bangladesh. It offers a centralized and secure system that enables students to purchase academic books directly from the university's official inventory with ease and reliability.

This platform addresses common challenges such as outdated book editions, inconsistent pricing, and limited availability. It supports two primary user roles: **students**, who can browse, search, and order books; and **administrators**, who manage inventory, track orders, and maintain user data through a dedicated dashboard.

The system is developed using modern web technologies, including **HTML**, **CSS**, **JavaScript**, **PHP**, and **MySQL**. It ensures a responsive design, secure authentication, and a smooth ordering experience, ultimately creating an efficient and user-friendly environment for both students and administrators.

2.2 Project Details

The **GUB Online Book Store** is a dynamic and secure web-based system developed for the students of Green University of Bangladesh to purchase academic textbooks in an organized and convenient way. The system supports two major user roles: **Students** and **Administrators**.

Students can:

- Register and log in securely
- Browse and search for available books
- Add books to cart and place orders

Administrators are responsible for:

- Managing and updating the book inventory
- Monitoring and processing student orders
- Handling registered student accounts

Core modules of the system include:

1. Secure login and registration system
2. Book listing with real-time search functionality
3. Shopping cart and order placement interface
4. Admin dashboard with full book and order management

Technologies Used:

- **Frontend:** HTML5, CSS3, JavaScript
- **Backend:** PHP
- **Database:** MySQL

Overall, the system offers a responsive interface, reliable performance, and seamless integration between frontend and backend. It ensures efficient book distribution and inventory control, benefiting both students and administrators of the university.

2.2.1 User Registration and Login System

This module allows students to create accounts and access the system securely. The registration form collects basic information and stores it in the database. During login, user credentials are verified, and sessions are created for authentication. Security features such as password hashing and session validation are implemented to prevent unauthorized access.

This module ensures that only registered students and authorized administrators can access protected features of the bookstore.

2.3 Implementation

The implementation phase involved coding each module of the system based on the design specifications. This section highlights the core functionalities and how they were developed using front-end and back-end technologies.

The system was developed using PHP for server-side scripting, MySQL for database handling, and HTML/CSS/JS for the user interface. The code was written in modular form to ensure easy debugging and future scalability.

2.4 Algorithms

The system's logic is primarily implemented using conditional structures and database queries. The following pseudocode represents the process of placing an order by a student:

Algorithm 1: Book Order Processing Algorithm

Input: Selected book(s), quantity, user ID
Output: Order confirmation and inventory update
Data: Product database, Order table

```
1 begin
2     Verify user session;
3     Fetch selected book IDs and quantities;
4     Calculate total price;
5     Store order in database with timestamp;
6     Update inventory quantity;
7     Return order confirmation to user;
```

Chapter 3

Performance Evaluation

3.1 Simulation Environment / Simulation Procedure

The system was developed and tested in a local environment using XAMPP on Windows 10. The simulation includes full backend (PHP, MySQL) and frontend (HTML, CSS, JS) functionalities. Testing was performed through multiple user scenarios, including student actions (login, ordering) and admin tasks (product management).

3.1.1 Functional Testing

Each module was tested separately to verify its expected functionality. The following functionalities were tested:

- User Registration and Login
- Book Search and Filtering
- Cart Management
- Order Placement and Confirmation
- Admin Product Management and Order Tracking

3.1.2 Browser Compatibility

The system was tested on multiple browsers including Chrome, Firefox, and Edge. All pages were responsive, with no major UI breaks or functional issues reported.

3.2 Results Analysis / Testing

This section presents the actual results obtained during testing. The performance and correctness of the system were validated through screenshots, feature walkthroughs, and sample interactions.

3.2.1 User Dashboard and Book Browsing

The homepage allows students to browse books, search titles, and add them to the cart. The UI is responsive and loads quickly even on mobile devices.

3.2.2 Order Placement Result

Once books are added to the cart, students can place orders. The system stores orders in the database and displays order confirmation. Orders are visible to both user and admin dashboards.

3.2.3 Admin Panel Testing

The admin can log in, add/update/delete products, and view user orders. Each admin action is instantly reflected on the student side, confirming real-time database updates.

3.3 Results Overall Discussion

The system performed well in simulated test cases. All major features were functional and stable under regular load. No data loss or security breach was observed during any test scenario.

3.3.1 Complex Engineering Problem Discussion

The project addressed the following complex engineering challenges:

- Maintaining consistency across user sessions and database transactions
- Real-time inventory update on multiple orders
- Handling failed sessions or incorrect user inputs securely
- Designing a dynamic system that supports multiple user types (students and admins) within a single platform

The system fulfills multiple criteria of complex engineering problem-solving, including problem abstraction, application of technical knowledge, data management, and integrated system functionality.

Chapter 4

Conclusion

4.1 Discussion

The GUB Online Book Store project successfully achieves its core objective of providing a structured and user-friendly platform for purchasing academic books. The system integrates essential features such as secure login, book catalog browsing, order placement, and admin-level inventory management. Through its modular design, the platform ensures a smooth experience for both students and administrators.

The development process involved requirements analysis, system design, implementation, and performance testing. All modules were tested individually and in integration to verify expected behavior, stability, and responsiveness.

4.2 Limitations

Despite the successful implementation, the system has some limitations:

- The platform is hosted locally and does not include online payment gateway integration.
- Admin functions are not role-based (i.e., no multi-level admin access control).
- There is no feature for users to leave reviews or feedback on books.
- The system does not support auto-restock notifications for low inventory.
- Mobile responsiveness is present but could be improved further with dedicated testing.

4.3 Scope of Future Work

Several enhancements can be considered to improve the platform:

- Integrating a secure payment gateway (e.g., SSLCommerz or Stripe)
- Implementing email notifications for order confirmation and delivery updates
- Adding review and rating features for books
- Developing analytics tools for admins (e.g., most ordered books, sales trends)
- Expanding the platform to include e-book purchases and downloadable content
- Deploying the system to a live server with proper hosting and domain

With these improvements, the GUB Online Book Store can evolve into a complete academic commerce platform serving both students and the university administration efficiently.

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