Bachelor of Science in Computer Science & Engineering

Proposal for Super Shop Management System

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Project Proposal

Application for the Approval of B.Sc. Engineering Project

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Table of Contents

List of Figures

1 Introduction

The online super shop management system-**GreenCart** is an innovative platform designed to meet the needs of modern e-commerce by seamlessly connecting customers, products, orders, and suppliers into a unified system. From browsing and purchasing to secure payments and real-time order tracking, every aspect of the shopping experience is carefully orchestrated. The system simplifies operations for store owners, allowing them to manage their stores effortlessly while providing a smooth, intuitive shopping experience for customers. By integrating a secure payment system, it ensures both convenience and safety for online transactions. With its dynamic approach to organizing and processing data, this system opens the door to a new era of digital retail, offering a powerful solution for today's fast-paced online market.

2 Motivation

In an era where online shopping dominates the retail landscape, consumers demand more than just convenience—they expect **security, personalization** and **trust**. **GreenCart** is driven by the need to **redefine e-commerce** by addressing the critical gaps that current platforms like Amazon and Daraz fail to fully resolve. Issues such as **exposing sensitive financial data, inconsistent product quality, and impersonal shopping experiences** persist, leaving customers wary and unsatisfied. Our system is built to solve these challenges head-on by introducing **cutting-edge, privacy-first payment methods** that eliminate the need to disclose personal information, empowering users to shop confidently. Moreover, with **automated expiry date tracking** and **stringent quality control**, customers can rest assured that every product meets the highest standards of freshness and authenticity. In addition to these innovations, our system will offer **seasonal products**, ensuring that users have access to items that are only available at specific times of the year, such as **holiday-themed goods, seasonal produce,** and **limited-edition items**. This feature enhances the

shopping experience by aligning product availability with seasonal demand, allowing customers to easily find and purchase items relevant to different times of the year.

Beyond these innovations, we focus on delivering an intelligent, real-time personalized experience that adapts to individual preferences, transforming the way users interact with products and ensuring that every recommendation is both relevant and timely. By offering **eco-friendly shipping options** and **transparent return processes**, the system also taps into the growing demand for sustainability and customer-centric service. This project is not just about improving the status quo—it's about revolutionizing e-commerce, giving customers a smarter, safer and more meaningful shopping journey while providing retailers with the tools to thrive in a competitive market.

3 Background Study/Literature Review

In recent years, the growth of e-commerce has been exponential, fuelled by the increasing accessibility of the internet and mobile technologies. Major platforms like Amazon, eBay, and regional players like Daraz have transformed the way people shop by offering vast product catalogs, secure payment systems and integrated logistics solutions. These platforms provide a bridge between sellers and buyers, enabling seamless transactions across borders and revolutionizing the retail industry and rapidly transforming the global retail landscape. However, despite their global reach and success, certain limitations exist, creating opportunities for innovation and improvement in newer systems.

3.1 Existing Systems and Key Features

Platforms like Amazon and Daraz have developed robust systems for managing online retail. Amazon, for example, offers extensive functionality in areas such as customer personalization, product recommendations, and global logistics. Daraz has gained popularity in South Asia by adapting to local market needs, integrating

features like cash on delivery and localized logistics, catering to regions with limited access to global payment methods and delivery infrastructure .

Common components include:

- **Product Management**: Offering searchable and filterable catalogs with detailed product descriptions, images and user reviews.

- **User Accounts**: Allowing customers to manage their profiles, addresses, payment methods, and carts. Sellers have distinct dashboards for managing their product inventories and order statuses.

- **Order and Payment Systems**: Supporting a range of payment options, including credit/debit cards, digital wallets and in some cases, cash on delivery, along with real-time order tracking and history.

- **Logistics Integration**: Offering partnerships with local and global shipping companies for effective delivery and return management.

- **Ratings and Reviews**: Empowering users to leave feedback on products and sellers, contributing to transparency and helping future customers make informed decisions.

3.2 Challenges in Existing Systems

Despite their global influence, platforms like Amazon and Daraz face several challenges that impact user experience:

1. **Data Privacy Concerns**: Both Amazon and Daraz collect extensive user data, including personal information, payment details, and browsing behavior, raising concerns over data privacy. As data breaches become more common, consumers are increasingly concerned about how their personal and sensitive data is stored and used.

2. **Product Quality and Expiry Control**: Both platforms struggle with maintaining consistent product quality, particularly from third-party sellers. One recurring issue is the absence of features like **expiry date tracking** for perishable

or consumable goods, leading to cases where customers receive expired or near-expiry items.

3. **Payment Security**: While platforms offer secure payment gateways, customers are still required to provide sensitive financial information such as credit card numbers or bank details, increasing the risk of exposure to fraud or theft.

4. **Impersonal Recommendations**: One of the most significant challenges is the impersonal nature of recommendation systems. Both Amazon and Daraz rely heavily on algorithmic recommendations, which, while effective at scale, often fail to capture nuanced customer preferences or provide meaningful suggestions beyond past purchase behavior and general browsing history, making the experience feel impersonal and sometimes irrelevant to the user's immediate needs.

5. **Cumbersome Return Processes**: Existing platforms often have complex return procedures, which may vary by region and cause frustration among customers, especially when dealing with faulty or misrepresented products.

3.3 Specific Objectives and Possible Outcomes

The online super shop management system-GreenCart will integrate the successful features of existing platforms while addressing their limitations by focusing on **data privacy, product quality control, secure payments**, and a more **personalized experience**. Key improvements include:

1. **Secure, Privacy-First Payment Systems**: Unlike traditional platforms where sensitive information like credit card numbers or bank details are required, the new system will utilize **tokenized payments** or **cryptographic methods** where no sensitive customer data is exposed. Payment processes will be handled through secure, anonymized channels, ensuring that no personal financial details are stored or shared.

For instance, integrating with platforms like Apple Pay or Google Pay allows users to complete transactions without revealing sensitive information, reducing fraud risks. Additionally, implementing **blockchain-based payments** could enhance

security further by providing decentralized transaction records that are difficult to tamper with.

2. **Expiry Date Tracking**: The platform will introduce a **product expiry** management system, particularly for perishable goods, pharmaceuticals, and cosmetics. Sellers will be required to input expiry dates for relevant products and customers will be able to view this information before making a purchase. This will allow us to ensure product freshness and customer satisfaction.

3. **Enhanced Data Privacy**: Recognizing the growing concern over data privacy, the system will adopt a minimal data collection policy, gathering only essential information for transactions while allowing users to control their data preferences.

4. **Improved Personalization**: A key feature of the system will be **real-time personalization**. The recommendation engine will not only use past purchases but will also consider real-time interactions, customer preferences, and explicit feedback to offer more relevant and timely suggestions. This approach will create a more engaging and individualized shopping experience.

5. **Simplified Returns and Refunds**: The system will feature an **easy-to-navigate return process**, allowing customers to initiate returns or exchanges with minimal friction. Automatic refunds will be processed quickly through the same tokenized or secure payment methods used for the purchase, enhancing customer satisfaction and trust in the platform.

6. **Sustainability and Eco-Friendly Practices**: The platform will support **sustainable shopping** by offering **eco-friendly products** and sellers who practice environmentally responsible manufacturing. Consumers will have the option to select **carbon-neutral delivery** methods encouraging minimal packaging practices, further enhancing the appeal to eco-conscious customers.

4 Implementation Plan and Technologies

4.1 Outline of Methodology

Week 1 :

1. Project Discussion:

• The project begins with discussions and brainstorming sessions to identify the main objectives, goals, and expectations of the project. During this time, the group memebers will attempt to define the problem and outline the potential solution.

• This task is estimated to take the first week.

Week 2 :

2. Project Topic Selection:

• Once the initial discussions are done, the project team will choose a specific topic or area to focus on. This stage involves researching available options and selecting the one most aligned with the project's objectives.

• It will span week 2.

Week 3:

3. Proposal Report:

• After selecting the project topic, the team will draft a proposal outlining the problem statement, objectives, scope, and proposed methodology. This document formalizes the project's approach and defines deliverables.

• The drafting of this report will take place in week 3.

4. E-R Diagram:

• In week 3, the focus would be to design the Entity-Relationship (E-R) diagram

as well, which visualizes the database structure for the project. This diagram will define entities, relationships, and attributes critical for the project's data model.

Week 4 :

5. Relational Mapping with Normalization:

• Week 4 is dedicated to creating the relational mapping, ensuring the database schema is normalized. This step ensures that data is logically structured to minimize redundancy and optimize database efficiency.

Weeks 5 - 8:

6. Frontend Development:

• Frontend development begins in week 5. The team will design and develop the user interface, ensuring it is responsive, user-friendly, and meets the project's functional requirements. This stage focuses on building the visual and interactive elements that users will engage with.

• The work spans one week.

7. Backend Development:

• Simultaneously, the backend development starts in Week 5 and extends through Week 8. During this time, the project will develop server-side logic, database connections, APIs, and any required integrations to ensure the application functions properly behind the scenes.

• This task takes four weeks, indicating that significant effort is required.

Weeks 9 - 10:

8. Testing and Quality:

• Starting in Week 9, the project enters the testing and quality assurance phase. This includes unit testing, integration testing, and system testing to ensure all features work as intended and the software is free of bugs. This stage emphasizes fixing any defects found and improving the overall performance and reliability of the system.

• The testing phase lasts for two weeks, through weeks 9 and 10.

Week 11:

9. Final Project Submission and Report:

- The final week, week 11, is reserved for compiling the final report and submitting the project. The report will summarize the work done, outcomes, challenges, and lessons learned. This stage also includes final checks to ensure that all deliverables have been met and that the project is ready for handover or deployment.

4.2 Time Management

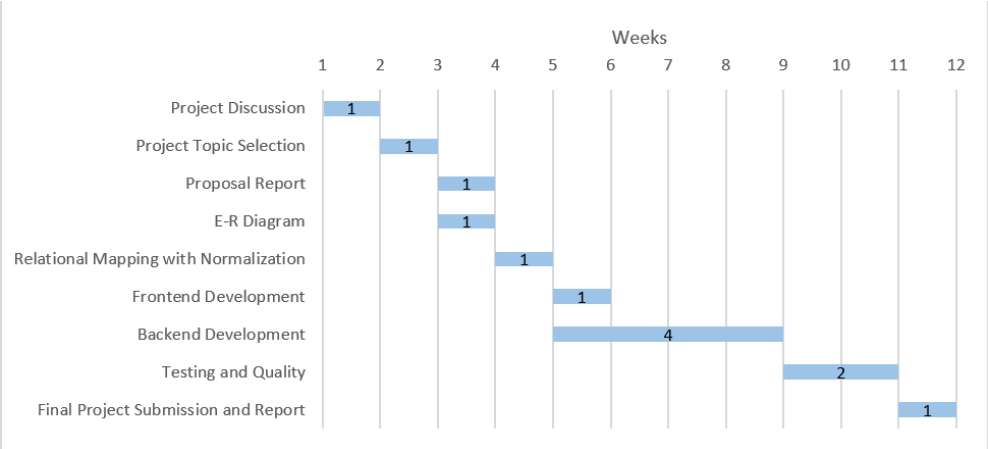

Figure 4.1: Gantt chart.

4.3 Required Tools

-Frontend Development :

- HTML
- CSS
- Thymeleaf(Java)

-Backend Development :

- Spring Boot
- MySQL

-IDE :

- Visual Studio Code

- IntelliJ IDEA

5 Conclusion

The online super shop management system-**GreenCart** is a comprehensive solution designed to enhance the e-commerce experience by addressing key concerns such as **data privacy, secure payments** and **product quality control**. With features like **privacy-first payment processing** and **automated product expiry tracking**, the system ensures that sensitive information is protected while maintaining high standards for product freshness and quality.

For customers, it is expected to offer a **seamless** and **personalized shopping journey**, providing convenience, safety, and confidence in every purchase. With **eco-friendly delivery options** and **easy returns**, the system also caters to sustainability-conscious consumers, creating a more thoughtful and responsible shopping experience.

On the retailer side, the platform streamlines operations, improves customer satisfaction, and fosters loyalty through **efficient management tools**. By simplifying the shopping process for both consumers and store owners, this system supports a more sustainable, secure, and user-friendly future in online retail, empowering businesses and customers alike.