UNIVERSITY OF SCIENCE AND TECHNOLOGY, CHITTAGONG

COMPUTER SCIENCE AND TECHNOLOGY DEPARTMENT

43th batch

Project Proposal

Course Title: Object Oriented Programming (CSE124)

Submission Date: 10th April 2025

Submitted To: Debabrata Mallick Faculty of CSE, USTC

Submitted by: Rohit Baidya

Roll No: 24070160

Semester: 1st

Section: B

Session July 2024

---

1. Project Title:

RetailEase: An OOP-Based E-Commerce Website for Retail Shopping

---

2. Project Purpose and Problem Statement:

The purpose of this project is to develop an interactive and efficient retail shopping website for customers to browse, search, and purchase products online.

Problem it solves:
Traditional retail shopping limits customer convenience and reach. Customers often face issues like limited product visibility, lack of real-time availability updates, or complicated checkout processes. This project addresses those by offering a seamless digital shopping platform.

OOP Relevance:
Using Object-Oriented Programming (OOP) ensures the project is modular, maintainable, and scalable. It simplifies the management of complex systems like user accounts, product categories, and payment gateways through class hierarchies and data encapsulation.

---

3. Main Goals and Key Functionalities:

Goals:

- Develop a fully functional e-commerce website for a retail shop.
- Implement user-friendly features for shopping and account management.
- Ensure security and data privacy.
- Provide real-time customer support.

Key Functionalities:

1. Home page
2. Product listing pages
3. Advanced search and filter system

4. Shopping cart and checkout process
5. User account creation and management
6. Wishlist management
7. Customer reviews and ratings
8. Live chat for customer support
9. Secure payment integration
10. Order tracking system
11. Discounts and coupon application
12. About Us page
13. Social media integration

---

5. Technology Stack:

- **Programming Language:** Java
- **Frameworks/Libraries:**
  - Spring Boot (for backend RESTful API)
  - Thymeleaf or JSP (for server-side rendering)
  - Bootstrap & jQuery (for frontend UI/UX)
- **Database:** MySQL
- **Additional Tools:** Hibernate ORM, Spring Security, Apache Tomcat

---

6. OOP Principles in Use:

- **Encapsulation:**
  All product, user, and transaction data will be stored in private variables with access through getters and setters.
- **Inheritance:**
  A generic `User` class (with fields like name, email) will be extended by `Customer` and `Admin` subclasses to add specific behaviors.
- **Polymorphism:**
  Overloaded methods for different types of search inputs; overridden methods in `Admin` and `Customer` classes for login validation.
- **Abstraction:**
  Interfaces and abstract classes will be used for payment processing, hiding complex implementation from the user interface.

---

7. Project Phases & Estimated Timeline:

Phase	Duration
Requirements Gathering	1 Week
System Design & Planning	1 Week
Backend Development (APIs)	2 Weeks
Frontend Development	2 Weeks
Database Integration	1 Week
Security and Payment Integration	1 Week
Testing and Debugging	1 Week
Deployment and Final Review	1 Week

Total Duration: ~9 Weeks

---

8. Final Outcome and Usefulness:

The final product will be a responsive and secure online retail shop that enables users to shop conveniently from anywhere, browse a large product range, track orders, and receive support in real-time.

User Benefits:

- Easy navigation and product discovery
- Fast and secure checkout
- Personal account management
- Order tracking and real-time updates
- User engagement through reviews and live chat

---

9. Proposal Summary & Project Impact:

This project harnesses the power of Java and OOP principles to build a modern, scalable, and secure online retail platform. By simplifying the shopping experience and expanding business reach, the website will have a strong impact on both users and retailers. The modular design ensures that the system can be upgraded and maintained easily in the future.

---

10. References:

- Oracle Java Documentation: https://docs.oracle.com/javase/
- Spring Boot Docs: https://spring.io/projects/spring-boot
- MySQL Documentation: https://dev.mysql.com/doc/
- OWASP Security Guidelines: https://owasp.org/
- Bootstrap Framework: https://getbootstrap.com/
