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Designing and Developing a Web-Based Shopping Solution with Price and Time Comparison

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ABSTRACT

This project involves creating a web-based e-commerce platform that allows users to compare the prices of cosmetic products from three different brands. The system helps users make better buying choices by showing all product prices in one place, along with important features like logging in, saving favorites items, adding products to a shopping cart, and using a search tool to find what they need. When a user searches for a product, the website shows the product's name, its price, and a button to compare it. Selecting this option opens a comparison page that shows the same product from three different brands. This helps users see price differences easily and make informed decisions quickly.

The platform uses HTML, CSS, and JavaScript for the front end to create a responsive design that works well on different devices and is easy to navigate. Node.js works as the backend framework, managing server-side tasks, and MySQL is used as the database to store structured data. Overall, the system offers an efficient and well-organized way to compare prices of cosmetic products, making online shopping more convenient and transparent for customers.

INTRODUCTION

The proposed system is a web-based e-commerce tool that allows users to compare the prices of cosmetic products from three different brands all in one place. Users do not have to visit multiple websites or apps separately. They can search for a product, view its details, and compare prices in a single platform. The website is dedicated only to cosmetics, which keeps the interface simple, focused, and easy to use for people interested in beauty products.

The system includes basic e-commerce features such as user sign-up and login, wish list management, shopping cart functionality, and product search. New users can register and log in securely, while existing users can update their wish list and shopping cart as needed. When a user searches for a specific cosmetic product, the system displays the product name, its price, and a "Compare" button. By clicking this button, a dedicated comparison page is generated that shows the same or similar product from three different brands. This helps users easily identify the cheapest or most suitable option without visiting multiple websites.

From a technical point of view, the front end of the website is built using HTML, CSS, and JavaScript to create a responsive and visually attractive user interface. The backend is implemented using Node.js, which handles user requests, validates login credentials, and communicates with the database. MySQL is used as the database management system to store and manage user details, product information, wish list items, and cart data in an organized way. The system integrates essential e-commerce functions with intelligent price comparison to make online cosmetic shopping more efficient and user-friendly.

Objective:

1. **To design and develop an e-commerce web application** that allows users to browse and search for cosmetic products efficiently.
2. **To implement a price comparison feature** that displays prices of the same cosmetic product from three different brands on a single page to help users make cost-effective decisions.
3. **To provide secure user account management** through a login and registration system using Node.js and MySQL for storing user details.

4. **To enhance user convenience** by implementing wishlist and add-to-cart functionalities so users can save and manage their preferred cosmetic products.
5. **To develop an intuitive and responsive user interface** using HTML, CSS, and JavaScript to ensure a smooth and user-friendly browsing experience across devices.
6. **To integrate a dynamic search functionality** that displays product name, price, and a compare option for quick product discovery.
7. **To ensure reliable data storage and retrieval** of product details, user information, wishlist items, and cart data using a MySQL database connected to the Node.js backend.
8. **To improve decision-making for users** by presenting side-by-side comparison of three brand options for each searched product in terms of price and availability.

LITERATURE SURVEY

E-commerce has become a dominant platform for purchasing consumer goods, including cosmetic products, due to its convenience, wider product availability, and the ability to compare multiple options in a single interface. Existing literature highlights that effective product discovery, price transparency, and personalization significantly influence user satisfaction and purchase decisions in online shopping environments.

Several studies emphasize the importance of **price comparison features** in e-commerce platforms. Conventional e-commerce sites typically allow users to view products from different brands but often require manual navigation between multiple pages or external comparison sites to evaluate prices and features. Research on comparison-based shopping systems suggests that integrating real-time price comparison within a single interface reduces user effort, supports informed decision-making, and increases the likelihood of conversion. This is particularly relevant in the cosmetics domain, where users frequently compare prices, brand reputation, and product variations before purchasing.

From a technological perspective, numerous works describe the use of **HTML, CSS, and JavaScript** for building interactive and responsive front-end interfaces, enabling dynamic content updates without page reloads. JavaScript frameworks and libraries are commonly employed to create interactive components such as search bars, comparison tables, and real-time form validation. On the server side, **Node.js** has gained prominence for developing scalable, event-driven backend services, especially suitable for handling multiple concurrent requests in web applications. **MySQL** is widely used as a relational database in e-commerce systems to efficiently manage structured data such as user details, product , prices, and transactional records, ensuring data integrity and supporting complex queries.

While various commercial platforms and research prototypes provide either price comparison or basic cosmetic product listings, there is limited integration focused specifically on **multi-brand price comparison for cosmetics within a single, dedicated interface** that also combines login-based personalization, wishlist management, cart handling, and a unified search mechanism. This gap motivates the development of the proposed system, which aims to bring together these features in one platform. By allowing users to search for a cosmetic product, view its price from three different brands on a single comparison page, and simultaneously manage their wishlist and cart under a secure login, the system seeks to improve both decision-making efficiency and user experience compared to traditional e-commerce interfaces.

METHODOLOGY

The way this project is being handled includes creating and building a web-based shopping app that lets people look at and compare the prices of beauty products from three different brands. First, the needed features like user login, product search, price comparison, wish list, and add-to-cart were figured out. Then, the system's structure was designed with separate parts for the front end, back end, and database. The front end was built with HTML, CSS, and JavaScript to make pages for login, search results, product comparison, wish list, and cart that work well on different devices and let users interact with them easily. The backend was built with Node.js to manage user authentication, product data retrieval, wish list and cart

functionalities, and database interactions via RESTful APIs. MySQL was used to store user data, product details, brand information, and price records. When a user looks for a product and chooses to compare it, the system gets the prices from three different brands and shows them all in one place for comparison. In the end, simple tests were done to make sure that the login, search, comparison, wish list, and cart features work properly and give a good experience for the user.

Existing System:

The existing method for purchasing cosmetic products online mainly relies on general e-commerce platforms and individual brand websites, where users have to manually search for the same product on different sites to compare prices. Most current systems display products and prices for a single brand or multiple brands, but they do not provide a dedicated, side-by-side comparison view within one interface. Users usually switch between multiple tabs or apps, remember or note down prices, and then decide which brand to choose. Although some price comparison websites exist, they are often generic, not focused specifically on cosmetics, and may not integrate features such as wish list management, add-to-cart, and personalized login on the same platform. This makes the process time-consuming and less convenient for users who want to quickly compare cosmetic products across multiple brands.

Disadvantages:

- **Users have to visit multiple websites or apps to compare prices for the same cosmetic product.**
- **Price comparison is done manually by the user, which is time-consuming and inconvenient.**
- **No single platform provides a clear side-by-side comparison of three brand prices in one screen.**
- **Users may forget or confuse prices because they rely on memory or manual notes.**
- **Existing price comparison sites are mostly generic and not focused specifically on cosmetic products.**
- **Many platforms do not integrate login, wish list, and add-to-cart features with price comparison in one system.**
- **Lack of personalization (such as saving favourite products and past comparisons) affects user experience.**
- **Frequent switching between tabs/pages can lead to user frustration and reduced satisfaction.**

Proposed System

The proposed system is an e-commerce web application specifically designed for comparing cosmetic product prices across three different brands. The system provides a user-friendly interface where users can register and log in, search for cosmetic products, add items to a wish list, and manage a shopping cart. When a user searches for a product, the system displays the product name, price, and a **Compare** option. On selecting this option, a comparison page is generated showing the same product from three different brands along with their respective prices and basic details, enabling users to make cost-effective purchase decisions.

The front end of the system is developed using **HTML, CSS, and JavaScript** to ensure responsive design and interactive user experience. The backend is implemented using **Node.js**, which handles business logic, server-side processing, and secure communication with the database. **MySQL** is used as the relational database to store user details, product information, wish list data, cart items, and price details from different brands. The system follows a modular structure, separating user interface, application logic, and data storage, which makes it easier to maintain, update, and scale in the future.

1.1 System architecture diagram

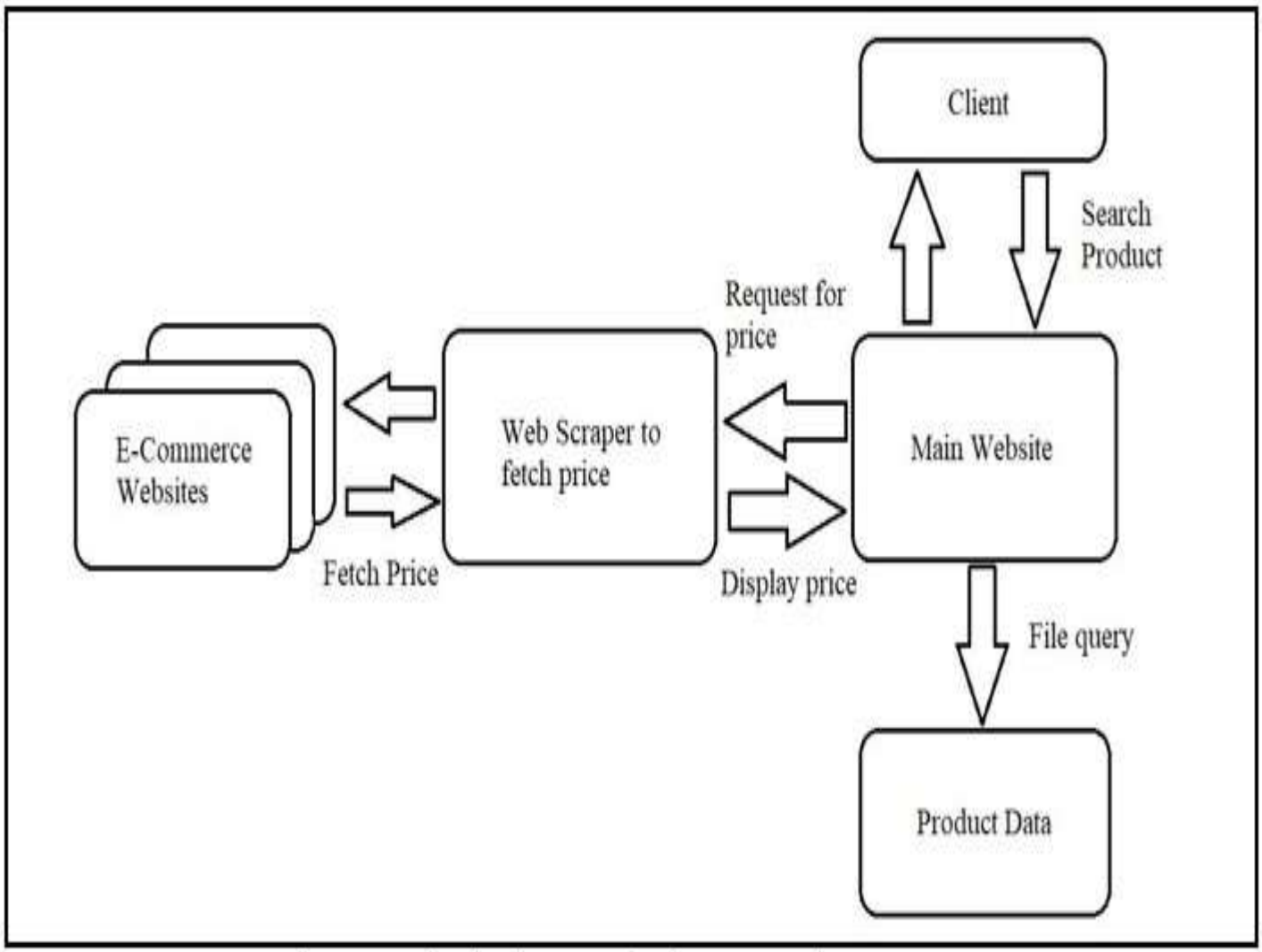


Figure 1:- Block Diagram of Price Comparison System

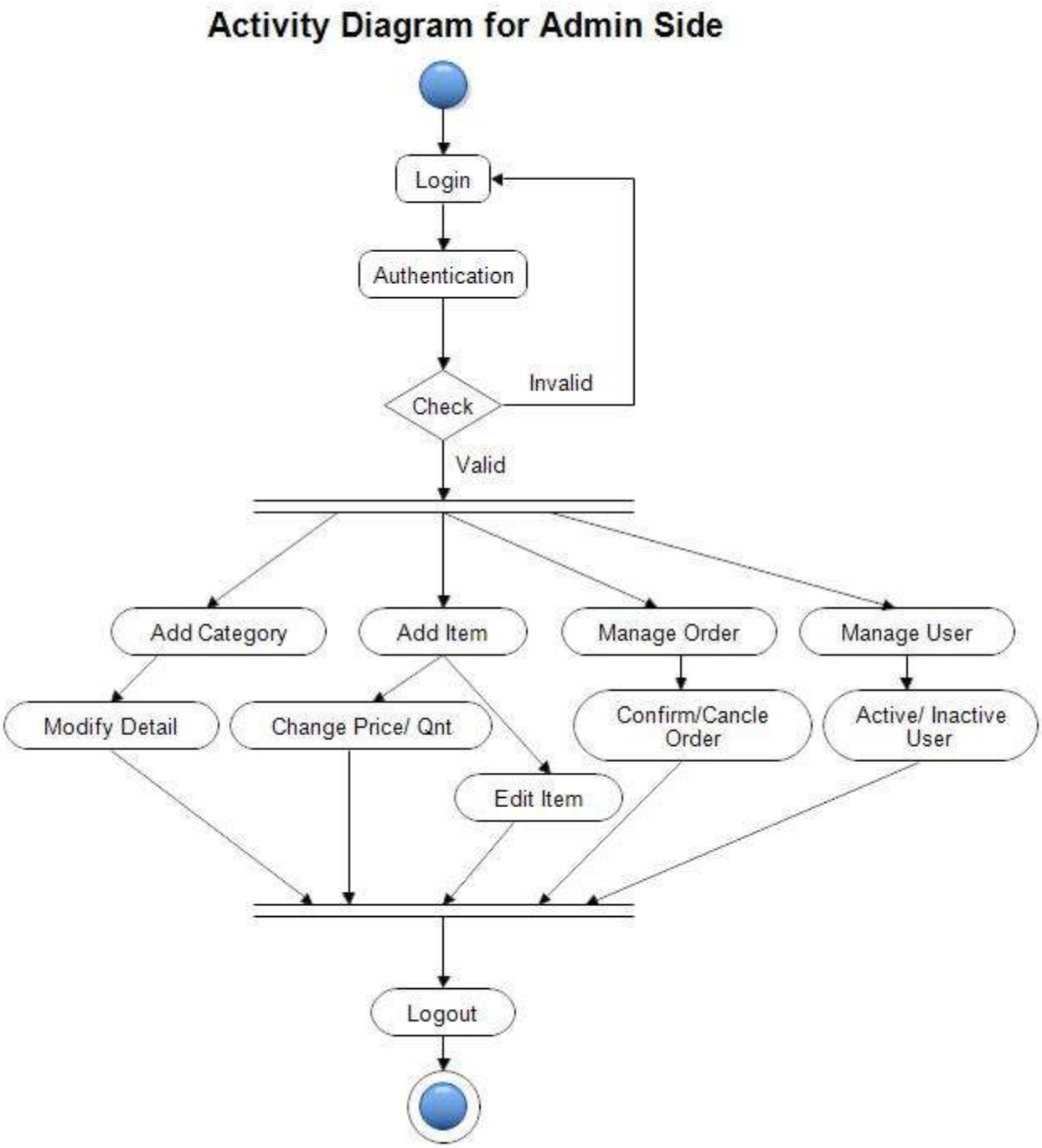
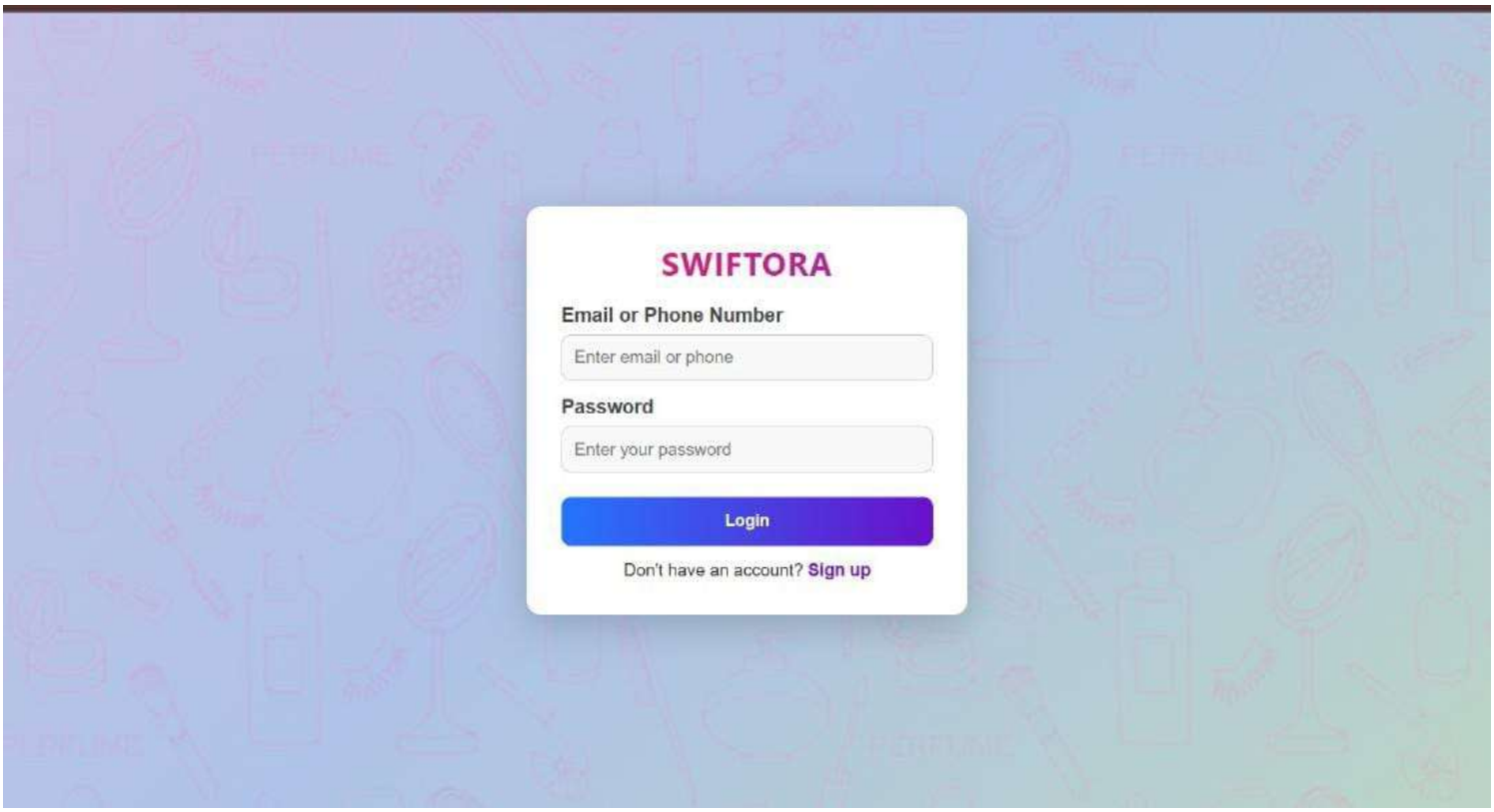


Fig 2. Activity Diagram

RESULT: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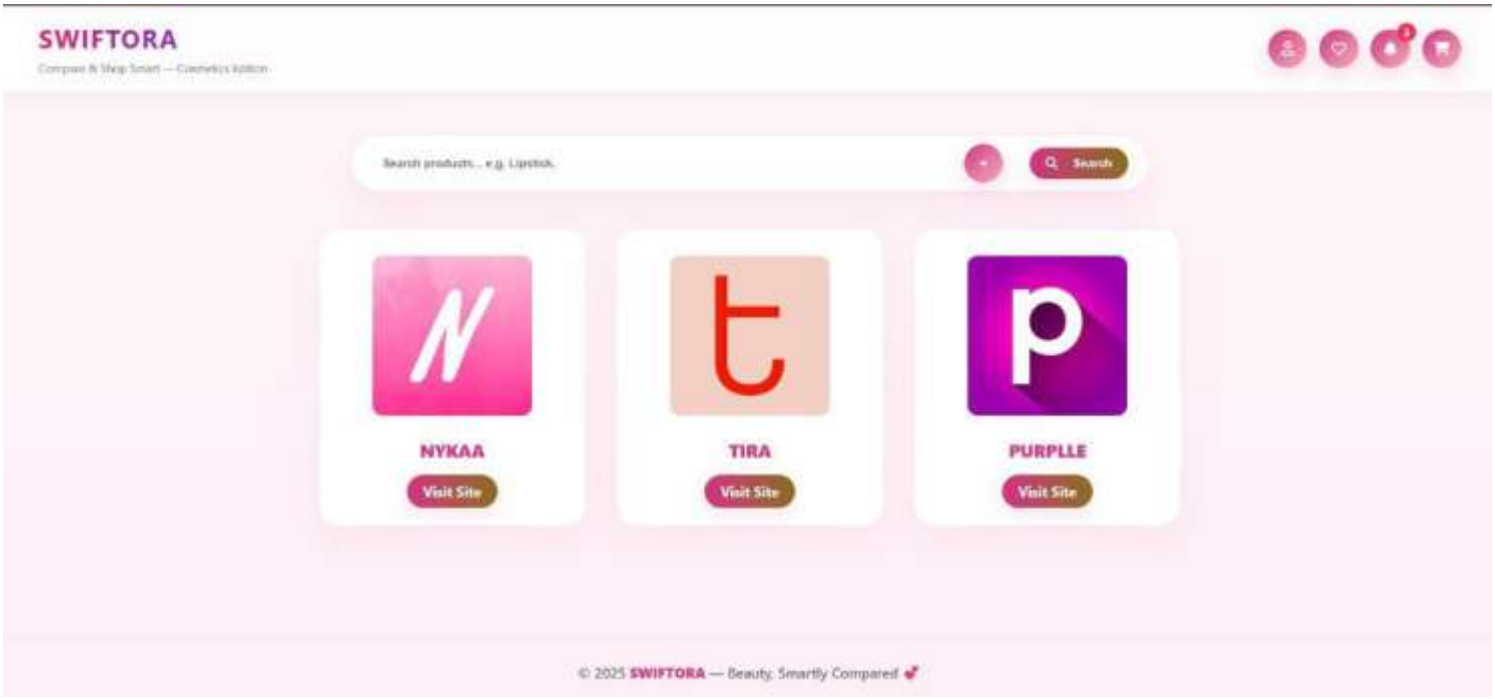
Don't have an account? Sign up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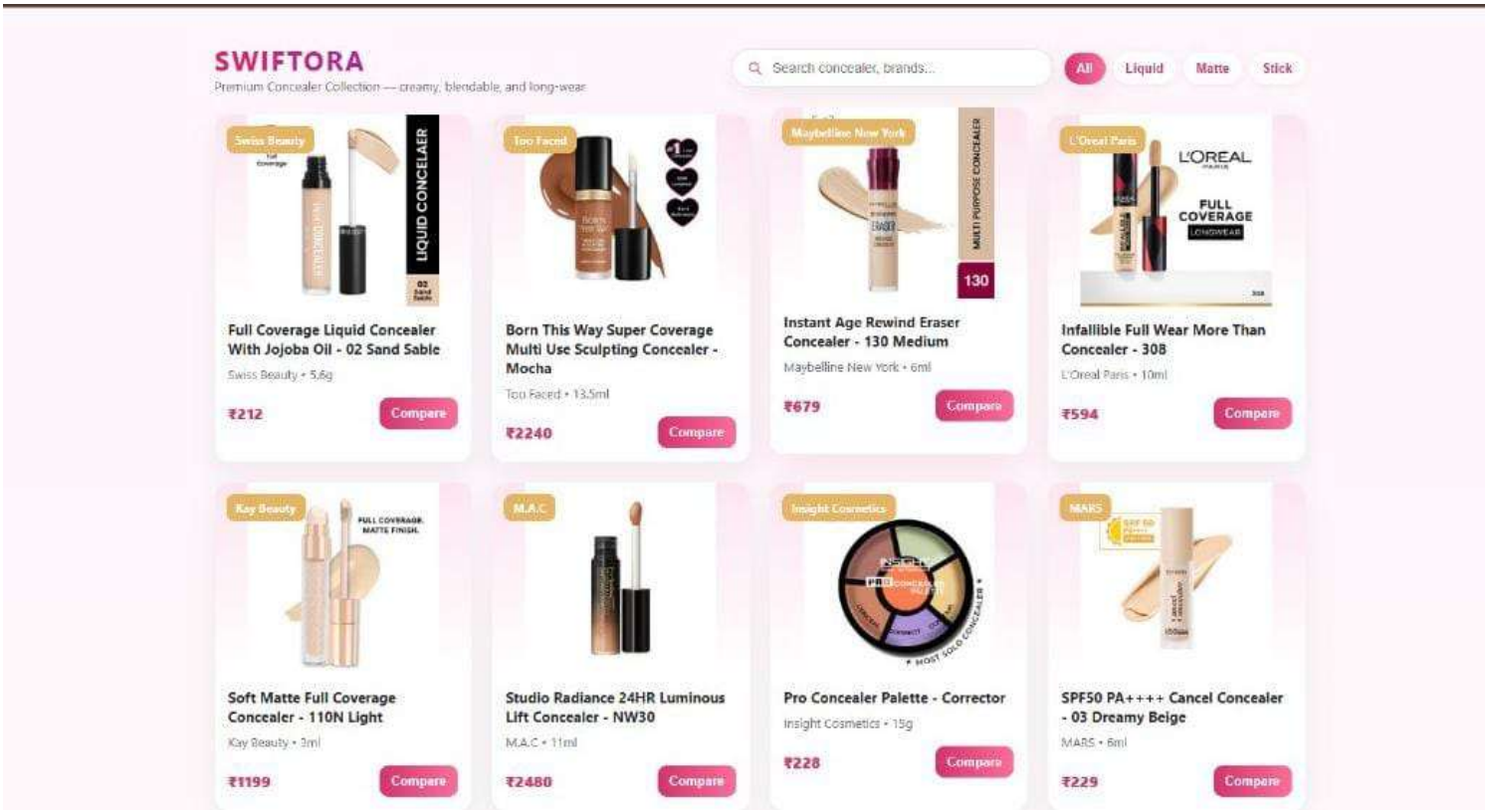

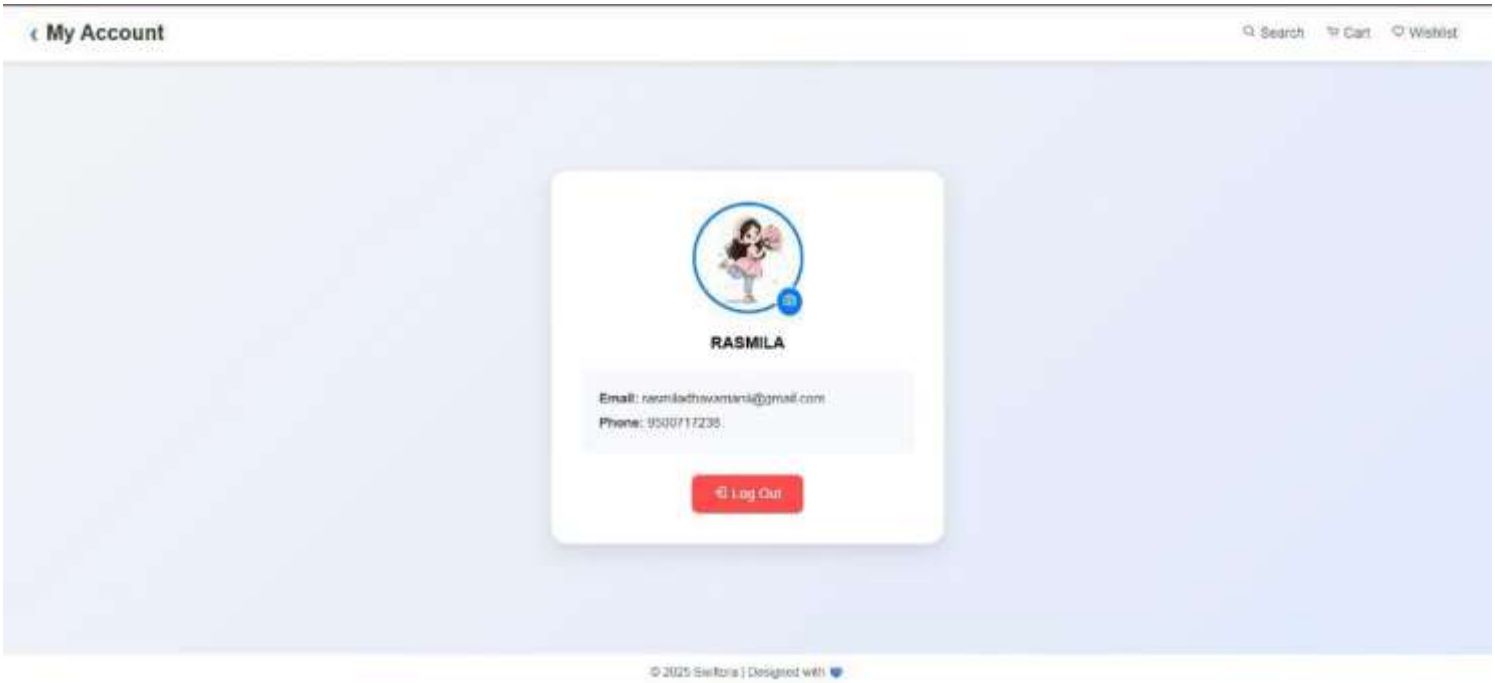

SYSTEM REQUIREMENTS

Hardware Requirements:

- **Processor: Minimum Intel i3 or equivalent**
- **RAM: At least 4 GB (recommended 8 GB)**

- **Storage: 250 GB HDD / 120 GB SSD (minimum)**
- **Monitor: 15.6" or higher, resolution 1366×768 or above**
- **Input Devices: Keyboard, mouse**
- **Network: Internet connection (for browsing and testing website)**
- **Optional: Printer (for report/document printing)**

- Operating System: **Windows / Linux / macOS**
- Frontend: **HTML, CSS, JavaScript**
- Backend: **Node.js** (with npm)
- Database: **MySQL**
- Web Browser: **Chrome / Firefox / Edge** (latest version)
- Code Editor/IDE: **VS Code / Sublime Text / Notepad++**
- Additional Tools: **XAMPP / WAMP** (if needed for MySQL management), **Git** (optional for version control)

Software Requirements:

- Operating System: **Windows / Linux / macOS**
- Frontend: **HTML, CSS, JavaScript**
- Backend: **Node.js**
- Database: **MySQL**
- Web Browser: **Chrome / Firefox / Edge** (latest version)
- Code Editor/IDE: **VS Code / Sublime Text / Notepad++**
- Additional Tools: **XAMPP / WAMP** (if needed for MySQL management), **Git** (optional for version control)

Module Description:

1 User Authentication Module

- Handles user registration and login.
- Stores and verifies user credentials using MySQL.
- Manages session handling for secure access to user features.

2. Product Search Module

- Allows users to search cosmetic products by name or category.

- Fetches product details (name, price, brand) from the database.
- Displays search results with a Compare option.

3. Price Comparison Module

   - Activated when the user clicks the Compare button.
   - Retrieves the selected product details from three different brands.
   - Displays a comparison table showing prices and basic product info.

4. Wishlist Module

   - Enables users to add and remove products from their wish list.
   - Stores wish list items in the database for each logged-in user.
   - Allows users to view and manage their saved products.

5. Add to Cart & Checkout Module

   - Lets users add selected products to the shopping cart.
   - Updates quantity, total price, and cart items dynamically.
   - Prepares cart data for future order or payment integration.

6. Database Management Module

   - Manages tables for users, products, brands, wish list, and cart.
   - Handles CRUD operations using Node.js and MySQL.
   - Ensures data consistency and integrity across all modules.

7. Admin Management Module (if included)

   - Allows admin to add, update, or delete cosmetic products and brands.
   - Manages price updates for different brands.
   - Monitors user activity and maintains overall system data.

CONCLUSION

The proposed e-commerce website successfully provides a convenient platform for users to compare prices of cosmetic products from three different brands in a single interface. By integrating features such as user login, wish list, add to cart, and intelligent product search, the system improves the overall shopping experience and helps users make more cost-effective and informed purchase decisions. The use of HTML, CSS, and JavaScript for the frontend ensures a responsive and user-friendly interface, while Node.js and MySQL on the backend provide reliable data handling and efficient processing of user requests.

Overall, the system demonstrates a practical solution for price comparison in the cosmetic domain and can be further enhanced in the future by integrating online payment, real-time offers, more brands, and personalized recommendations to make it a fully functional commercial application.

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