Cosmetics Product Management System

A report submitted in partial fulfillment of the requirement for the award of the degree Of

Bachelor of Technology in Computer Science & Engineering

in

Faculty of Engineering

Submitted by

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DECLARATION

We, **MD AMIT HASAN ROBI** bearing Roll No. ADTU/0/2023-27/BTCS/210, **MD SAMIUR RAHMAN TANIM** bearing Roll No. ADTU/0/2023-27/BTCS/212 hereby declare that the thesis entitled ***"Cosmetics Product Management System"*** is an original work carried out in the Department of Computer Technology, Assam down town University, Guwahati with exception of guidance and suggestions received from my supervisor, **Dr. Prasenjit Kr. Das**, Assistant Professor, Department of Computer Technology, Assam down town University, Guwahati. The data and the findings discussed in the thesis are the outcome of my research work. This report is being submitted to Assam down town University for the degree of ***Bachelor of Technology".***

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We would like to extend our heartfelt appreciation to everyone who contributed to the successful completion of this project. Our sincere thanks go to our project team members for their dedication and collaboration throughout the project. Each member played a significant role in shaping the outcome. Special thanks to our coordinator, **Dr. Prasenjit Kr. Das**, for his guidance and valuable feedback, which enriched our work. Lastly, we want to thank our friends for their patience and encouragement during this project. Their belief helped us to stay motivated and to persevere through difficult times.

ABSTRACT

The project looks into the development of a Cosmetics Product administration System, aiming to streamline and optimize the administration of cosmetic stocks and sales. This study emphasizes practical implementation by examining the architecture, design concepts, and deployment strategies necessary for constructing an effective inventory management system. Utilizing contemporary online technologies, such as dynamic front-end frameworks and secure backend solutions, we created a scalable and user-friendly application. Furthermore, the project covers crucial aspects such as data security, mistake minimization, and analytics-driven decision-making in the context of inventory systems. By sharing insights obtained via real-world application, this project empowers businesses with foundational tools and practical techniques required for managing and developing their operations efficiently in the cosmetics industry.

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1. INTRODUCTION

1.1 Overview of the project

This research digs into the field of inventory management systems specialized for the cosmetics sector. The Cosmetics Product Management System is meant to provide an effective and user-friendly system for managing product stocks, sales, and customer data. This application combines modern technologies such as dynamic front-end frameworks, secure backend systems, and resilient databases to create a scalable and trustworthy platform. Through actual implementation and experimentation, major components such as system architecture, interface design, inventory tracking, sales monitoring, and data analytics are studied. This project intends to establish a fully functional management system that streamlines operations and promotes business decision-making. By providing insights and recommendations for enhancing inventory management, this project gives firms with the skills and information essential to thrive in a competitive environment.

1.2 Motivation

The impetus behind this project originates from the growing demand for efficient and scalable solutions in the cosmetics sector to handle inventory, sales, and customer data. With organizations increasingly adopting digital platforms to optimize operations, the necessity for contemporary, automated solutions has never been more vital. This project intends to address these difficulties by establishing a Cosmetics Product Management System that leverages cutting-edge web technologies and industry best practices. Driven by the chance to investigate innovative approaches to inventory management and sales optimization, this project attempts to enhance operational efficiency, decrease manual errors, and improve decision-making through analytics. Motivated by the potential to empower businesses with a comprehensive and user-friendly system, this endeavor intends to contribute to the digital transformation of the cosmetics sector while giving stakeholders with the tools and expertise to succeed in a competitive marketplace.

1.3 Scope and Objective

The scope of this project involves developing a **Cosmetic Product Management System** to efficiently manage cosmetic products, inventory, orders, and sales. It will utilize modern web technologies such as HTML, CSS, JavaScript, and back-end frameworks like Node.js with

Express.js, Python with Flask/Django, or Ruby on Rails, integrated with MySQL or MongoDB for data management. The system will focus on providing a user-friendly interface, secure data handling, and scalable functionality. The objective is to create a functional, responsive, and secure system that meets the needs of businesses in managing their cosmetic product operations, ensuring ease of use, performance, and data security.

1.4 Existing system

The existing system for managing cosmetic products typically involves traditional software applications relying on centralized databases and manual management of product inventories, orders, and customer data. These systems often face challenges such as limited scalability, slow response times, and difficulties in handling large volumes of data efficiently. The manual tracking of inventory and sales can lead to errors and inefficiencies, while the reliance on outdated technologies can hinder system performance and updates. Furthermore, many existing solutions lack user-friendly interfaces and security features to protect sensitive customer and product information. These limitations highlight the need for an automated, scalable, and secure system that can streamline the management of cosmetic products, making the development of a modern **Cosmetic Product Management System** a necessity.

1.5 Problem Definition

This project addresses the inefficiencies and limitations of traditional cosmetic product management systems, such as manual inventory tracking, slow order processing, lack of scalability, and weak security. These issues lead to errors, inefficiencies, and poor user experiences. Existing systems struggle with outdated technologies and complex data management, highlighting the need for a more automated, scalable, and secure solution. This project aims to develop a modern, user-friendly **Cosmetic Product Management System** that improves performance, data security, and overall usability.

1.6 Proposed System

The proposed system for this project focuses on developing a scalable, secure, and user-friendly **Cosmetic Product Management System**. Using technologies like HTML, CSS, JavaScript for the front-end, and Node.js, Python, or Ruby on Rails for the back-end, the

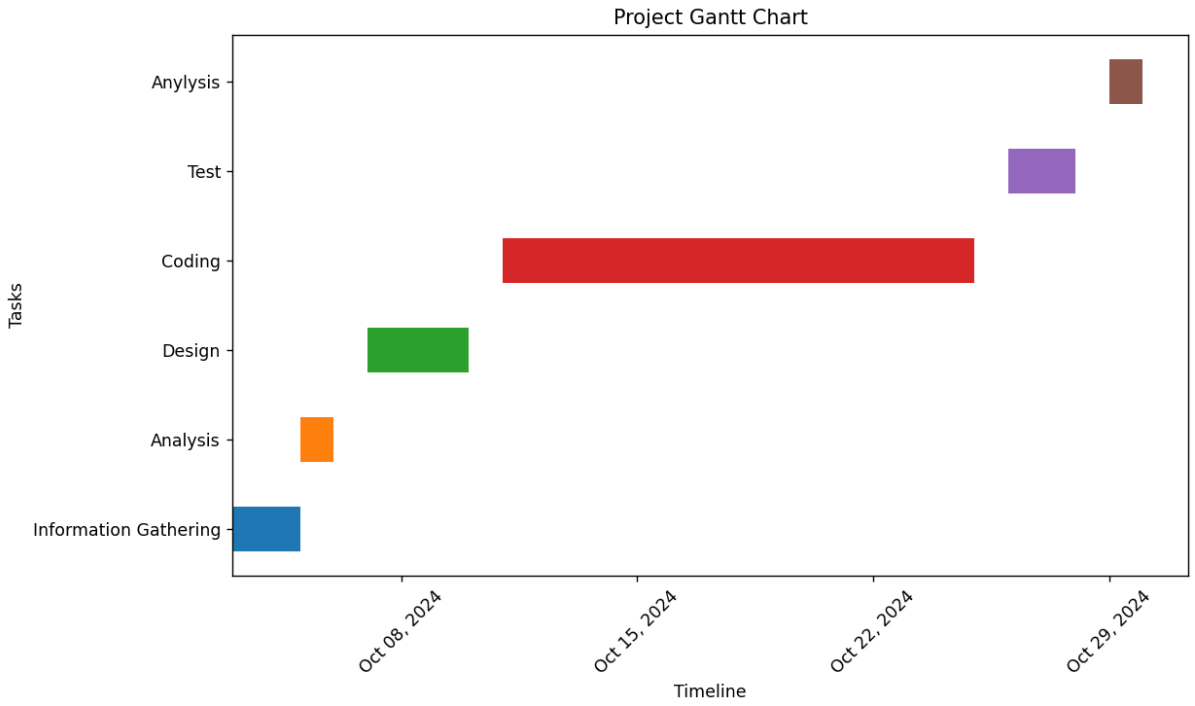
system will automate and streamline product, inventory, and sales management. It will integrate a database (MySQL or MongoDB) for efficient data handling and include features like user authentication, role-based access, and real-time updates. The system will prioritize scalability, performance, and security to offer a robust solution that overcomes the limitations of existing systems.

2. PROJECT ANALYSIS

2.1 Project Requirement Analysis

The project comprises the development of a Cosmetic Product Management System, requiring a careful examination of both functional and non-functional needs. The analysis phase comprises obtaining stakeholder inputs through interviews, questionnaires, and discussions to determine the system's major features, such as product catalog management, inventory tracking, order processing, and customer management. Functional needs are prioritized and recorded, providing unambiguous guidance for the design and development process. Non-functional criteria such as performance, scalability, security, and simplicity of use are also stated to ensure the system fulfills quality standards and user expectations. Validation approaches like prototyping and user input sessions will be utilized to refine and validate the requirements. This analytical phase will establish the foundation for constructing a strong, scalable, and user-friendly system that serves the needs of cosmetic product businesses efficiently.

2.2 Gantt Chart



2.3 Advantage and Disadvantage

Advantage:

1. **Easy Inventory Tracking:** Keeps track of products, quantities, and expiry dates efficiently.
2. **User-Friendly Interface:** Makes it simple to update product details and prices.
3. **Better Insights:** Provides reports on sales trends and inventory status.
4. **Task Automation:** Reduces manual work by automating tasks like stock updates and order processing.
5. **System Integration:** Can connect with online stores and payment gateways.

Disadvantages:

1. **High Initial Cost:** Development and setup may require a significant investment.
2. **Security Risks:** Sensitive data may be vulnerable if not properly secured.
3. **System Downtime:** Technical issues can affect business operations.
4. **Data Migration Challenges:** Moving from an old system may be difficult.
5. **Training Needed:** Employees may need time to learn how to use the system.

2.4 Project Lifecycle

The project lifecycle consists of several key phases that guide the project from start to finish:
i) **Initiation**: Defining the project's objectives, scope, and gathering initial requirements.
ii) **Planning**: Creating a detailed plan that outlines tasks, resources, timelines, and designing the overall architecture.
iii) **Execution**: Carrying out the development and implementation of the project according to the plan.
iv) **Monitoring and Control**: Tracking the project's progress, managing risks, and making adjustments to keep the project on track.
v) **Testing and Quality Assurance**: Conducting thorough testing to ensure the project meets the required standards for functionality, performance, and security.
vi) **Deployment**: Finalizing the project and deploying it in the target environment for use.
vii) **Operations and Maintenance**: Ongoing support, monitoring, and maintenance of the project after deployment.
viii) **Closure**: Concluding the project by handing over deliverables, reviewing the outcomes, and transitioning to long-term support or end-of-life activities.

2.5 Project feasibility

Project feasibility checks if a project is worth pursuing. Here are the main factors:

i) **Technical Feasibility**: Can the project be done with the available technology and skills?

ii) **Market Feasibility**: Is there enough demand for the project in the market?

iii) **Financial Feasibility**: Are the costs and expected profits reasonable, and will the project make money?

iv) **Operational Feasibility**: Can the project be completed and maintained with the current resources?

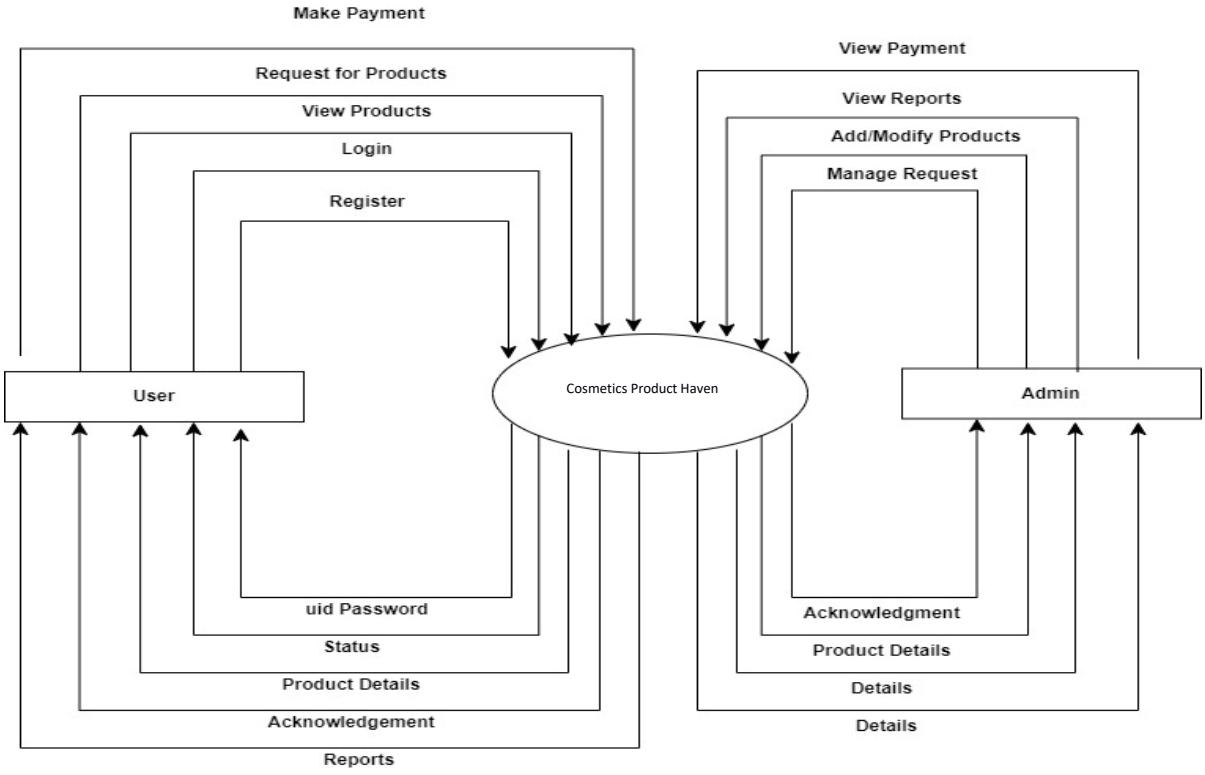
v) **Legal and Regulatory Feasibility**: Does the project follow all necessary laws and regulations?

vi) **Risk Analysis**: What are the potential risks, and how can they be reduced?

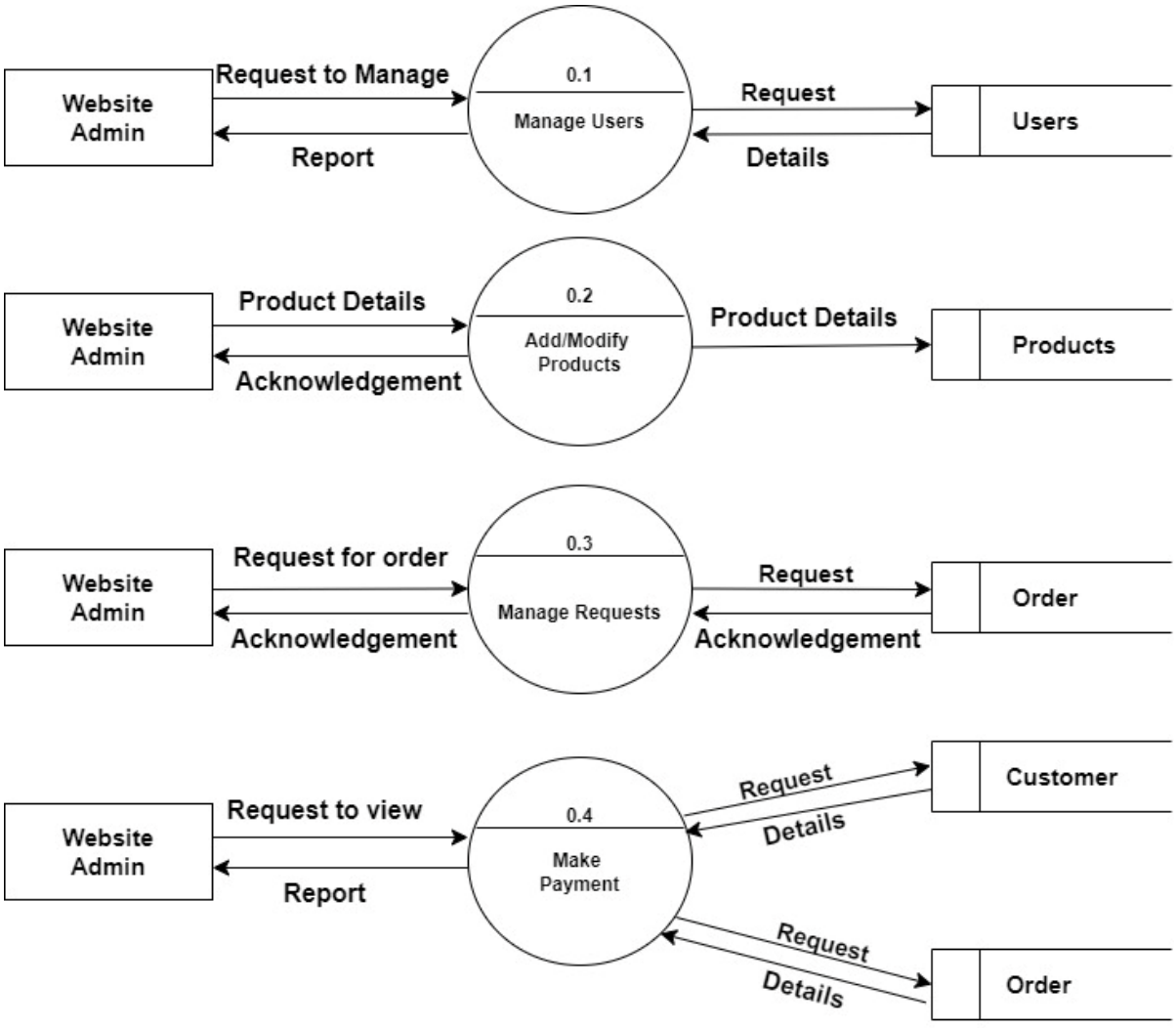
3. PROJECT DESIGN

3. Data Flow Diagram

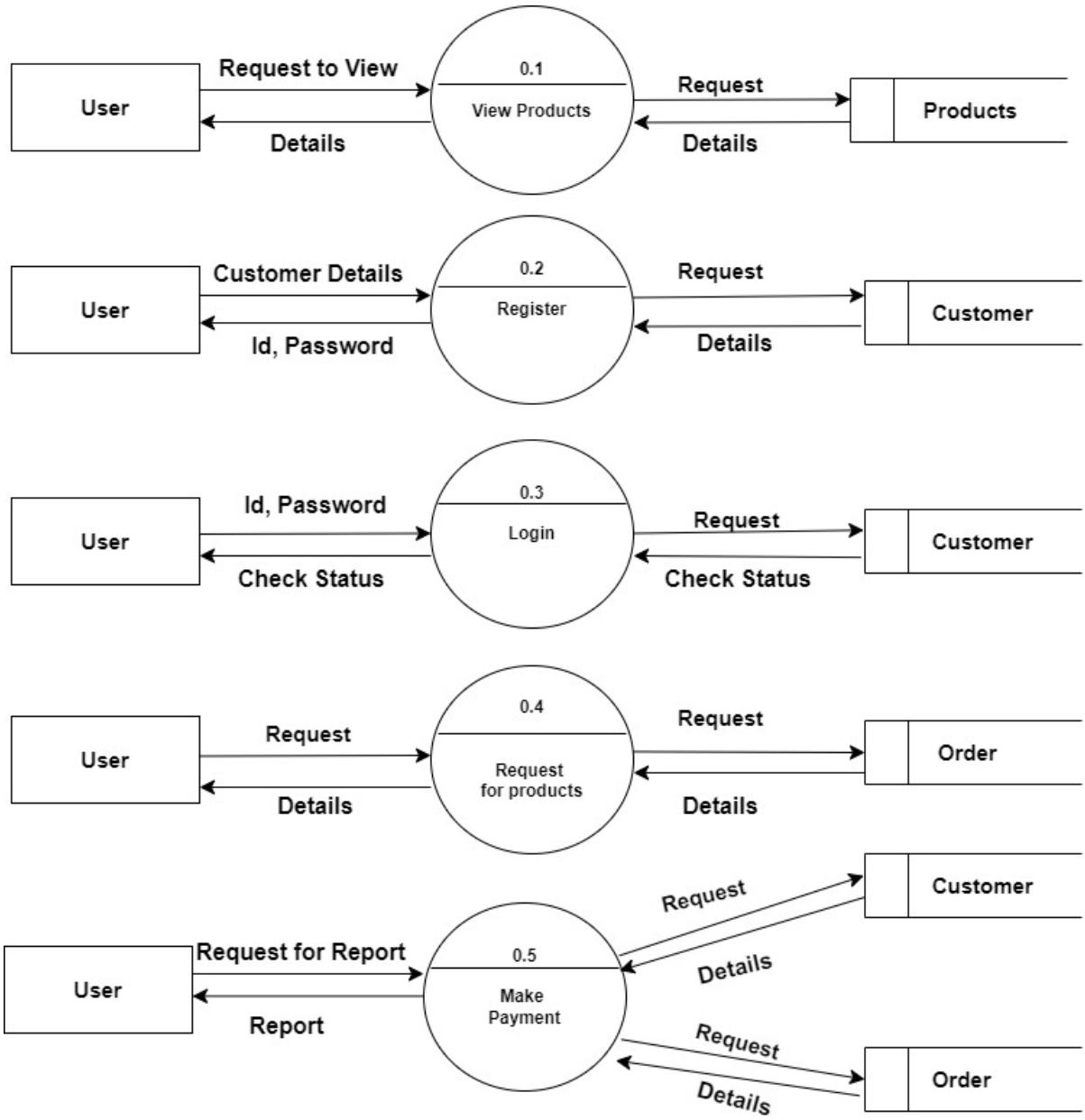
3.2.1 Context Diagram



3.2.2 DFD level 1

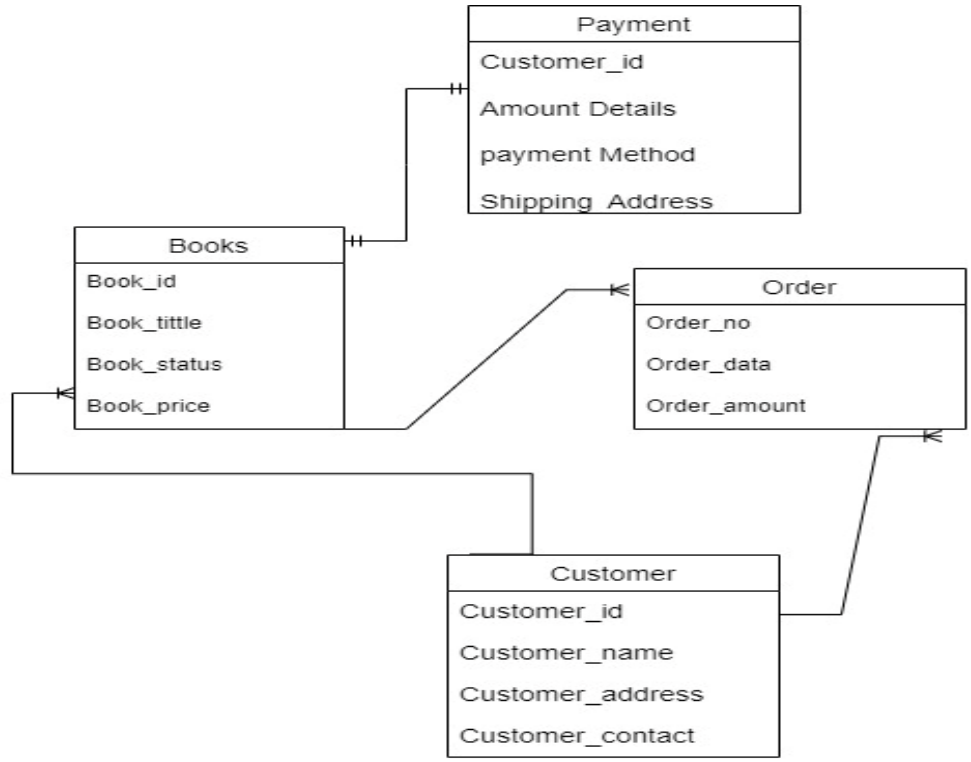


Level 1 DFD - Admin side

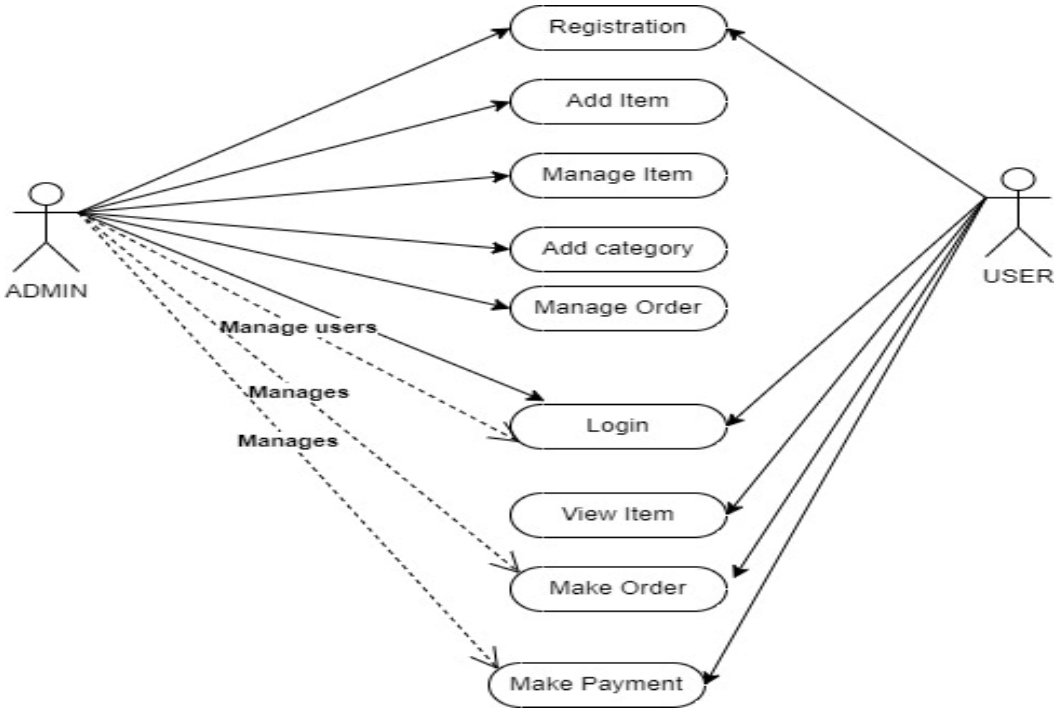


Level 1 DFD - User side

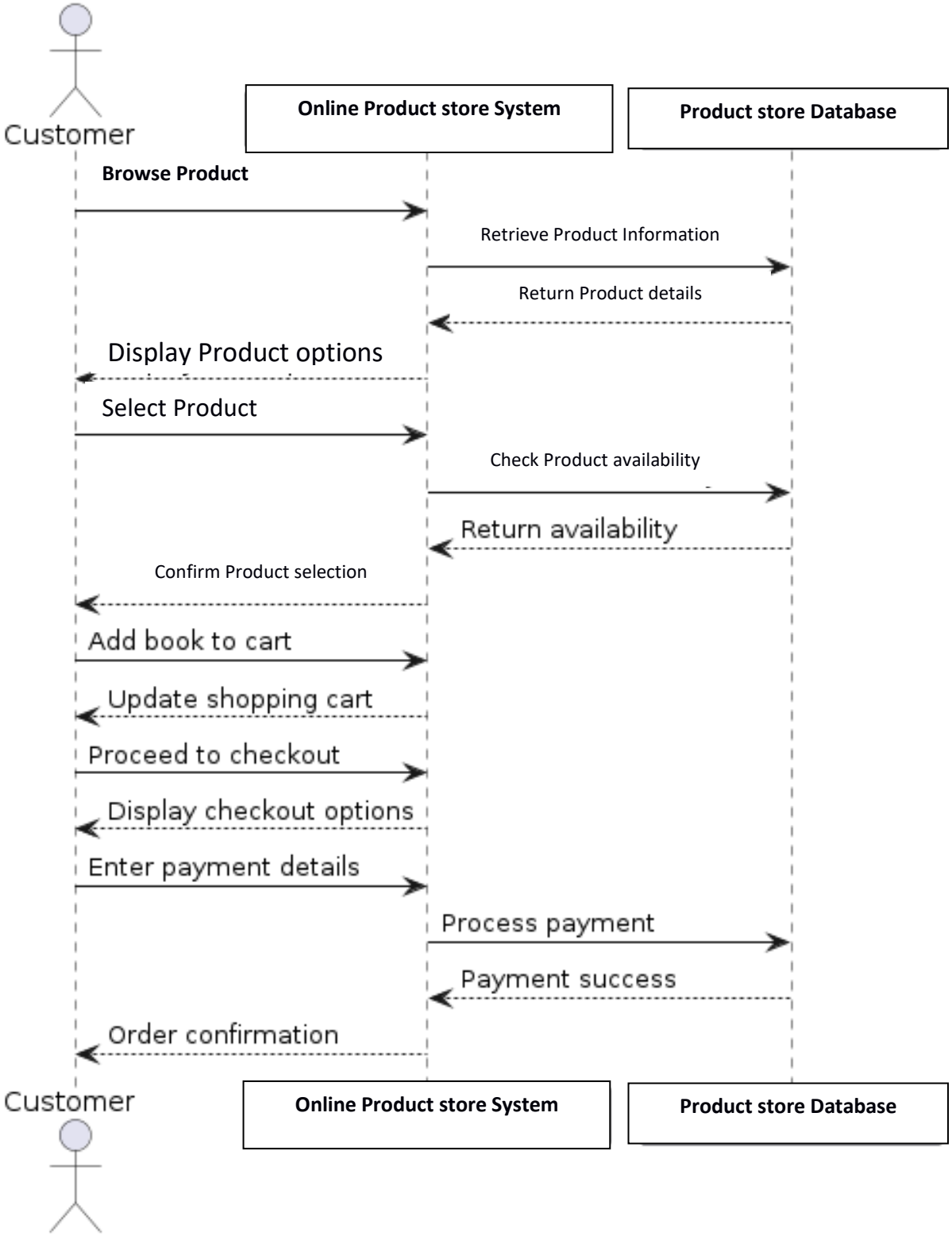
3.3 NoSQL Diagram

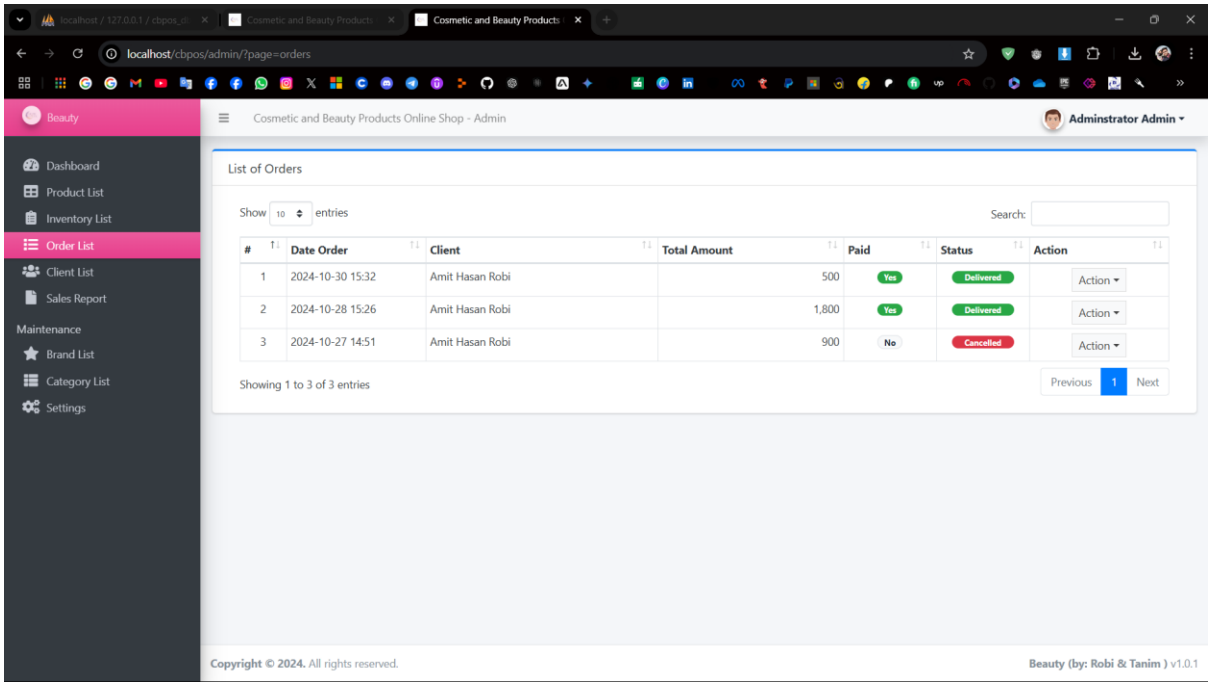


3.4 Use case Diagram



3.5 Sequence Diagram




Cosmetic and Beauty Products
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Beauty
Cosmetic and Beauty Products Online Shop - Admin
Adminstrator Admin
Dashboard
Product List
Inventory List
Order List
Client List
Sales Report
Maintenance
Brand List
Category List
Settings
List of Orders
Show 10 entries
Search:
Date Order Client Total Amount Paid Status Action
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2 2024-10-28 15:26 Amit Hasan Robi 1,800 Yes Delivered Action
3 2024-10-27 14:51 Amit Hasan Robi 900 No Cancelled Action
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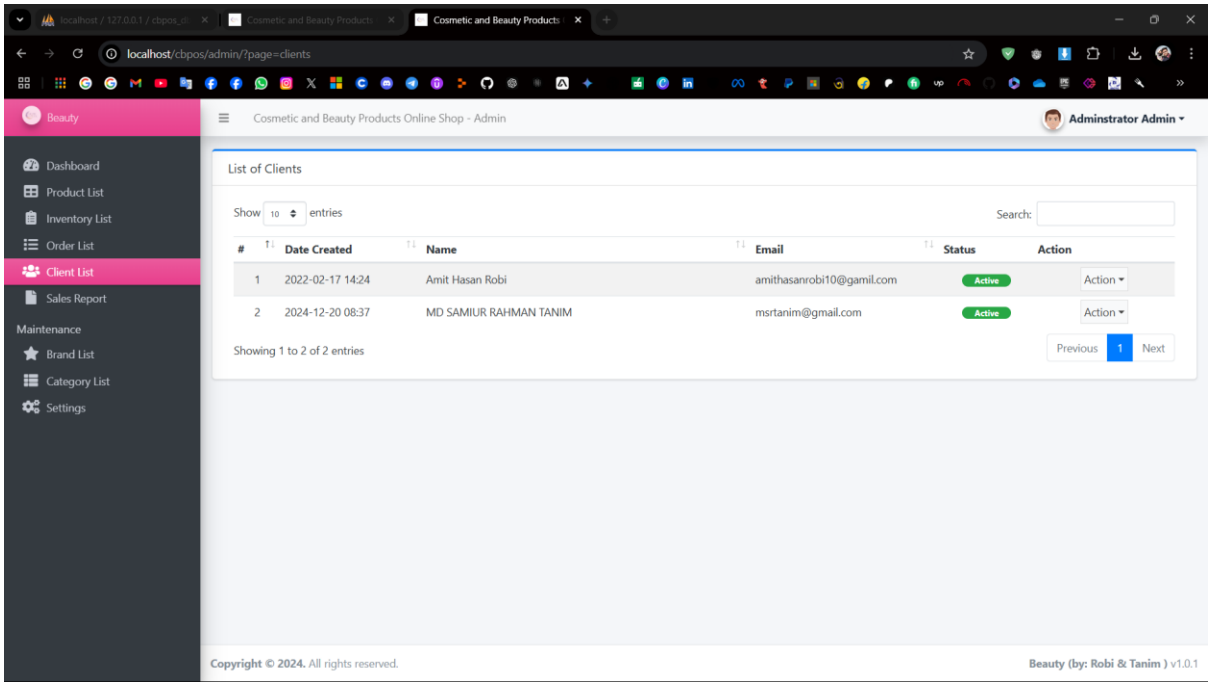
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Beauty
Cosmetic and Beauty Products Online Shop - Admin
Adminstrator Admin
Dashboard
Product List
Inventory List
Order List
Client List
Sales Report
Maintenance
Brand List
Category List
Settings
List of Clients
Show 10 entries
Search:
Date Created Name Email Status Action
1 2022-02-17 14:24 Amit Hasan Robi amithasanrobi10@gamil.com Active Action
2 2024-12-20 08:37 MD SAMIUR RAHMAN TANIM msrtanim@gmail.com Active Action
Showing 1 to 2 of 2 entries
Previous 1 Next
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4. PROJECT IMPLEMENTATION

4.1 Description of the software used

We have used a variety of tools and technologies to build the Cosmetics Product Management System:

i) Front-end (HTML, CSS, JavaScript, React):

- The user interface is created using HTML, CSS, and JavaScript for structure, design, and functionality.
- React is used to make the interface dynamic and responsive, allowing users to browse and manage products easily.

ii) Back-end:

- Node.js is used to handle the server-side operations, and Express.js manages API requests and routing.
- Ensures smooth communication between the front-end and the database.

iii) Database:

- mySQL is used to store product, inventory, and sales data.
- It provides a flexible and scalable solution for managing information efficiently.

iv) Authentication:

- JSON Web Tokens (JWT) are used for secure login and role-based access control.
- Protects sensitive user and system data.

v) Data Visualization (Chart.js):

- Chart.js is used to create simple charts and graphs for showing sales and inventory insights.

vi) Testing:

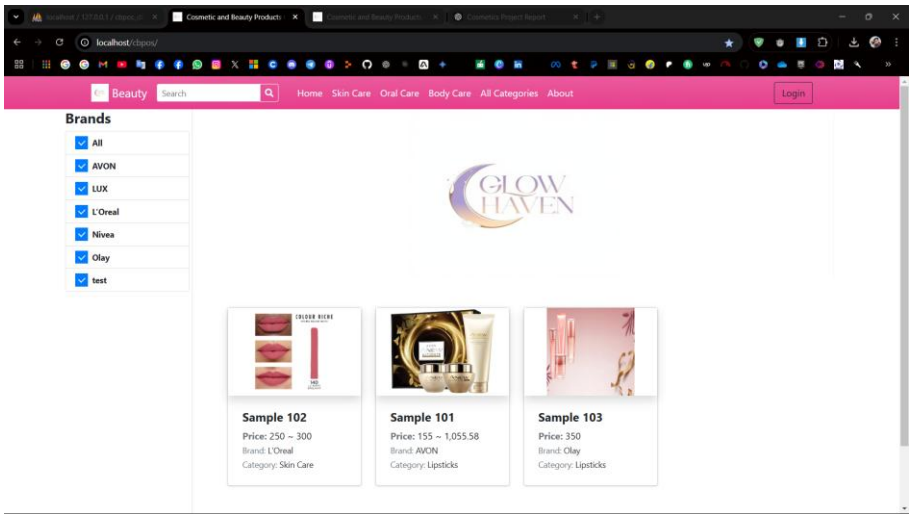
- Postman is used to test APIs and make sure the system works properly.

vii) Deployment:

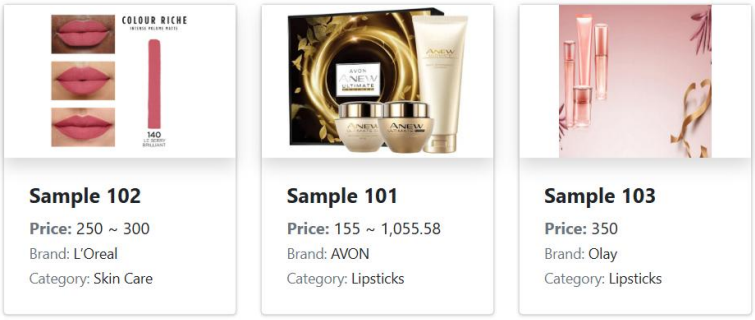
- Docker is used to package the application, making it easier to deploy and run on different systems.

4.2 Wireframes/ Ui

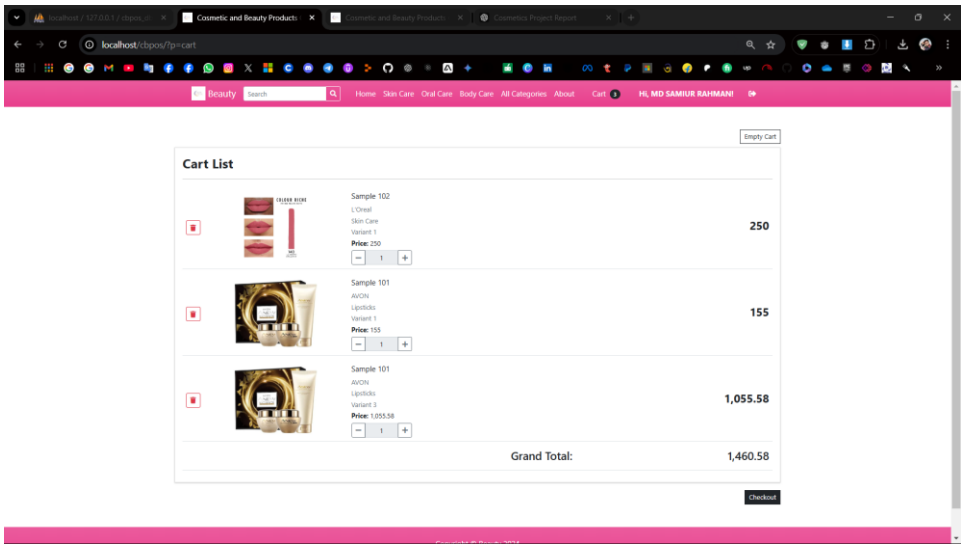
Home Page



Books



Cart



5. Testing / Result Analysis

5.1 Types of Testing

To ensure the Cosmetics Product Management System works properly and meets user needs, the following types of testing are performed:

i) Unit Testing:

- Tests individual parts of the system, like inventory or sales modules, to make sure they work correctly.

ii) Integration Testing:

- Checks how different parts of the system, like the front-end, back-end, and database, work together.

iii) End-to-End Testing:

- Tests the full process, from adding a product to generating reports, to ensure everything works smoothly.

iv) Performance Testing:

- Tests how the system performs under different conditions, such as heavy usage or large data loads.

v) Security Testing:

- Ensures user data and system information are safe and protected from unauthorized access.

vi) Usability Testing:

- Checks if the system is easy to use and identifies ways to improve the user experience.

5.3 Test Cases

i) Add Product:

- **Test Case:** Verify adding a new product to the system.
- **Expected Result:** Product is added and displayed in the inventory.

ii) Login Authentication:

- **Test Case:** Verify valid and invalid login attempts.
- **Expected Result:** Valid users log in; invalid attempts show an error.

iii) Fetch Product Data:

- **Test Case:** Check if product data is retrieved from MongoDB.
- **Expected Result:** Data is fetched and displayed correctly.

iv) Purchase Workflow:

- **Test Case:** Add a product to the cart and complete checkout.
- **Expected Result:** Product is purchased successfully.

v) Admin Actions:

- **Test Case:** Verify admin login, adding products, and viewing reports.
- **Expected Result:** Admin actions are performed without issues.

vi) Search Functionality:

- **Test Case:** Measure search response time for inventory.
- **Expected Result:** Results load quickly.

vii) Navigation:

- **Test Case:** Verify users can browse products by category.
- **Expected Result:** Smooth navigation and correct product display.

6.1 Conclusion

The Cosmetics Product Management System provides an efficient solution for managing product inventory, sales, and customer data. By leveraging modern web technologies and robust backend frameworks, the system ensures scalability, reliability, and user-friendliness. Features such as product addition, inventory management, and sales tracking offer seamless functionality for both administrators and users.

The implementation of rigorous testing methodologies, including unit tests, integration tests, and end-to-end tests, ensures the system's reliability, functionality, and security. These tests help identify and resolve potential issues during development, leading to a robust final product.

This project demonstrates the potential for creating scalable, effective, and user-friendly management systems, contributing valuable insights for further advancements in similar applications.

6.2 References:

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