

# **Project Report**

## **on E-Commerce Websit**

Submitted in partial fulfillment for the award of

**Diploma in Advance Computing (E-DAC) from**  
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# ACKNOWLEDGEMENT

We would like to express our heartfelt gratitude to all the individuals and resources that have contributed to the successful completion of this e-commerce project. Their support, guidance, and expertise have been invaluable throughout the development journey.

This project “**E-Commerce WebApp**” was a great learning experience for us and we are submitting this work to Advanced Computing Training School (CDAC ACTS HYDERABAD).

We are very glad to mention the name of *Ms. Sonia Devi Yaikhom* for her valuable guidance to work on this project. His guidance and support helped me to overcome various obstacles and intricacies during the course of project work.

We would also like to express our gratitude to our peers and friends who provided valuable insights and feedback during the development process. Their diverse perspectives helped us refine our ideas and make informed decisions.

We are immensely thankful to the open-source community for providing the tools and libraries that formed the foundation of our project. Specifically, we would like to acknowledge:

- **React** and the React team for revolutionizing front-end development and making the creation of dynamic user interfaces a seamless experience.
- **Redux Toolkit** for simplifying state management and asynchronous operations, making our application more organized and efficient.
- **Express** for enabling us to build a robust and efficient RESTful API for handling various server-side operations.
- **MongoDB** and **Mongoose** for providing a scalable and flexible database solution, allowing us to store and manage product, user, and order data seamlessly.
- **Stripe** for their secure and reliable PaymentIntent API, ensuring smooth and secure payment transactions.
- **Passport JS** for simplifying user authentication and session management, enhancing the security of our application.
- **Nodemailer** for enabling the seamless sending of important emails, such as order confirmations and password reset instructions.
- **Tailwind CSS** for its utility-first approach to styling, enabling us to create a responsive and visually appealing user interface.

Thank you to everyone who played a role, no matter how big or small, in making this e-commerce project a reality. Your contributions have left an indelible mark on this endeavor.

# Table of Contents

## 1. Introduction

- Project Overview
- Project Scope
- Target Audience
- Purpose of Documentation

## 2. Features

- Basic E-commerce Features
  - Product Lists
  - Product Details
  - Cart
  - Checkout
- Secure Payment Options
  - Secure Card Payments
  - Cash Payments
- Admin Panel
  - Add/Edit Orders
  - Add/Edit Products
- Sorting, Filtering, and Pagination
  - Sorting
  - Filtering
  - Pagination
- Authentication and User Profile
  - Authentication
  - User Profile
- Email Notifications
  - Order Emails
  - Reset Password Emails

## 3. Technical Details

- Front-End
  - React 18 with Tailwind CSS
  - Redux Toolkit with Async Thunk
  - React Router v6
  - JSON-server for Front-End Testing
- Back-End
  - MongoDB
  - Mongoose v7 as ODM
  - REST API using Express
  - Authentication using Passport JS
  - API Authentication using Passport JWT
- Server and Deployment
  - MongoDB Atlas Cloud Database
  - Vercel Server Deployment
- Email and Payments
  - Email using Nodemailer
  - Payments using Stripe

#### 4. **Modules Breakdown**

- Authentication Module
- Product Module
- Cart and Checkout Module
- Order Module
- Admin Panel Module
- Payment Module
- Email Module

#### 5. **Conclusion**

- Summary of Project Features
- Impact of Modern Technologies
- Future Enhancements

#### 6. **Acknowledgements**

- Contributions of Individuals and Resources

#### 7. **Appendix**

- Glossary
- References
- Contact Information

## **1. Introduction**

Welcome to the documentation for our comprehensive e-commerce project! In this section, we provide an overview of the project, its scope, the intended audience, and the purpose of this documentation.

### **1.1 Project Overview**

Our e-commerce project aims to create a robust and user-friendly online shopping platform that offers a seamless shopping experience to users while ensuring the security of their data and transactions. The platform encompasses a wide range of features, including product listings, cart management, secure payment options, user authentication, and an admin panel for efficient order and product management.

### **1.2 Project Scope**

The scope of this project covers the development of both front-end and back-end components, including the implementation of core e-commerce features, user authentication, data storage, and payment integration. The project also includes an admin panel for administrators to manage orders and products efficiently.

### **1.3 Target Audience**

This documentation is intended for a diverse audience, including:

- Developers interested in learning about the implementation of modern web technologies in an e-commerce context.
- Project managers seeking insights into the planning, development, and deployment of a feature-rich e-commerce platform.
- Students and learners aiming to understand the integration of various technologies to create a full-stack application.
- Anyone interested in the process of building a user-centric online shopping experience.

### **1.4 Purpose of Documentation**

The primary purpose of this documentation is to provide a comprehensive guide to the features, technical details, and modules of our e-commerce project. It serves as a reference for both developers working on the project and stakeholders interested in understanding its functionality and architecture.

In the subsequent sections, we delve into the project's features, technical components, modules breakdown, and acknowledge the resources and individuals who contributed to its realization.

## 2. Technical Details

In this chapter, we dive into the technical components that underpin our e-commerce project. We outline the front-end and back-end technologies, libraries, and tools that have been employed to create a robust and feature-rich online shopping platform.

### 2.1 Front-End Technologies

Our front-end development is centered around cutting-edge technologies that enable us to create an engaging and responsive user interface.

- **React 18 with Tailwind CSS:** We've chosen React, the widely acclaimed JavaScript library, to build dynamic and interactive components. The integration of Tailwind CSS facilitates rapid and consistent UI development with its utility-first approach.
- **Redux Toolkit with Async Thunk:** To efficiently manage our application's state, we employ Redux Toolkit, a comprehensive state management solution. The Async Thunk middleware enables smooth handling of asynchronous operations such as data fetching.
- **React Router v6:** Our application's navigation and routing system are powered by React Router v6, ensuring seamless navigation between different sections of the platform.
- **JSON-server for Front-End Testing:** During development, we simulate a backend API using JSON-server. This allows us to test front-end functionality and interactions with data without relying on a fully functional backend.

### 2.2 Back-End Technologies

Our back-end is designed to provide a secure and efficient foundation for our e-commerce platform.

- **MongoDB:** For data storage, we have adopted MongoDB due to its flexibility and scalability. It is used to store product information, user profiles, and order details.
- **Mongoose v7 as ODM:** To interact with the MongoDB database, we leverage Mongoose as our Object-Data Mapping (ODM) library. This simplifies database operations and adds structure to our data interactions.
- **REST API using Express:** The server-side operations are managed through Express, a lightweight web application framework for Node.js. We implement a RESTful API to handle tasks like managing product listings, user authentication, and more.
- **Authentication using Passport JS:** User authentication is managed using Passport JS, providing a secure mechanism for user registration, login, and profile access.
- **API Authentication using Passport JWT:** To enhance security, we secure our API endpoints using JSON Web Tokens (JWT), allowing authorized access to certain routes.

### 2.3 Server and Deployment

Our server and deployment strategies are designed for reliability and streamlined deployment processes.

- **MongoDB Atlas Cloud Database:** We host the MongoDB database on MongoDB Atlas, a cloud-based service that ensures data storage, replication, and availability.
- **Vercel Server Deployment:** Our front-end React application is deployed using Vercel's hosting service, simplifying the deployment process while ensuring a reliable user experience.

### 2.4 Email and Payments

We integrate external services to handle essential features such as email notifications and secure payments.

- **Email using Nodemailer:** Nodemailer is utilized to send order confirmation emails and password reset instructions. Integration with Gmail's SMTP system ensures reliable email delivery.
- **Payments using Stripe:** For secure online payments, we integrate Stripe's PaymentIntent API, providing a seamless and secure transaction process for users.

## Chapter 3: Project Overview

Welcome to the documentation of our ambitious e-commerce project, where we introduce a comprehensive online shopping platform designed to provide users with a secure and enjoyable shopping experience. This chapter provides an overview of the project's goals, features, and technologies employed.

### 3.1 Project Goals

Our primary goal is to create a cutting-edge e-commerce platform that demonstrates the seamless integration of modern technologies in crafting an exceptional online shopping environment. We aim to showcase the power of React, Redux, MongoDB, and other tools in building a feature-rich and user-friendly application.

### 3.2 Key Features

Our platform encompasses a range of essential features, including:

- **Product Showcase:** Users can explore an extensive collection of products, each accompanied by detailed descriptions, images, and transparent pricing.
- **Effortless Cart Management:** With an intuitive cart system, users can effortlessly add, review, and manage their selected items before proceeding to a secure checkout process.
- **Diverse Payment Options:** We prioritize user security by offering both online secure card payments through Stripe and a cash-on-delivery alternative.
- **User Authentication and Profiles:** Robust user authentication powered by Passport JS ensures secure account access. Users can manage their profiles, including personal information and order history.
- **Empowering Admin Panel:** Administrators have access to a powerful admin panel, allowing them to efficiently manage orders, products, and user accounts.



### 3.3 Technologies Employed

Our project harnesses the latest technologies for a seamless user experience:

- **Front-End Magic:** We rely on React 18 paired with Tailwind CSS for a responsive and visually appealing UI. Redux Toolkit with Async Thunk manages state, while React Router v6 ensures smooth navigation.
- **Solid Back-End Foundation:** MongoDB, backed by Mongoose v7, serves as our database solution, effectively storing product, user, and order data. Express forms the basis for our RESTful API, ensuring efficient communication between front-end and back-end.
- **Security First:** Passport JS and JWT secure our platform with robust authentication, allowing users to shop and manage their accounts confidently.
- **Reliability and Deployment:** MongoDB Atlas provides a cloud-based database solution for data storage, and Vercel offers reliable and efficient front-end deployment.

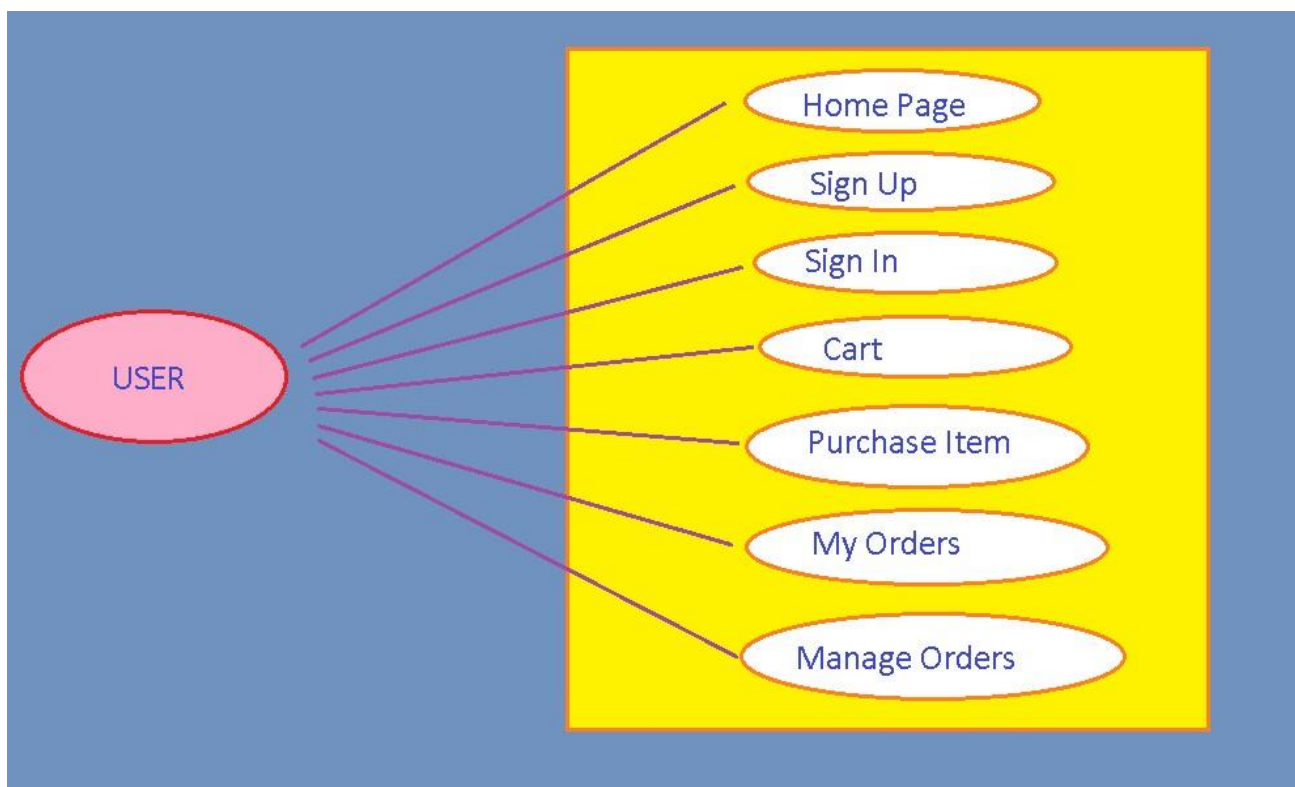
### 3.4 Purpose and Audience

This project and its documentation cater to various audiences, including developers seeking insights into modern web application development, project managers looking to understand the integration of intricate features, and learners eager to comprehend the interplay of diverse technologies. Through this project, we aim to provide an exemplary showcase of a feature-rich, secure, and user-friendly e-commerce platform.

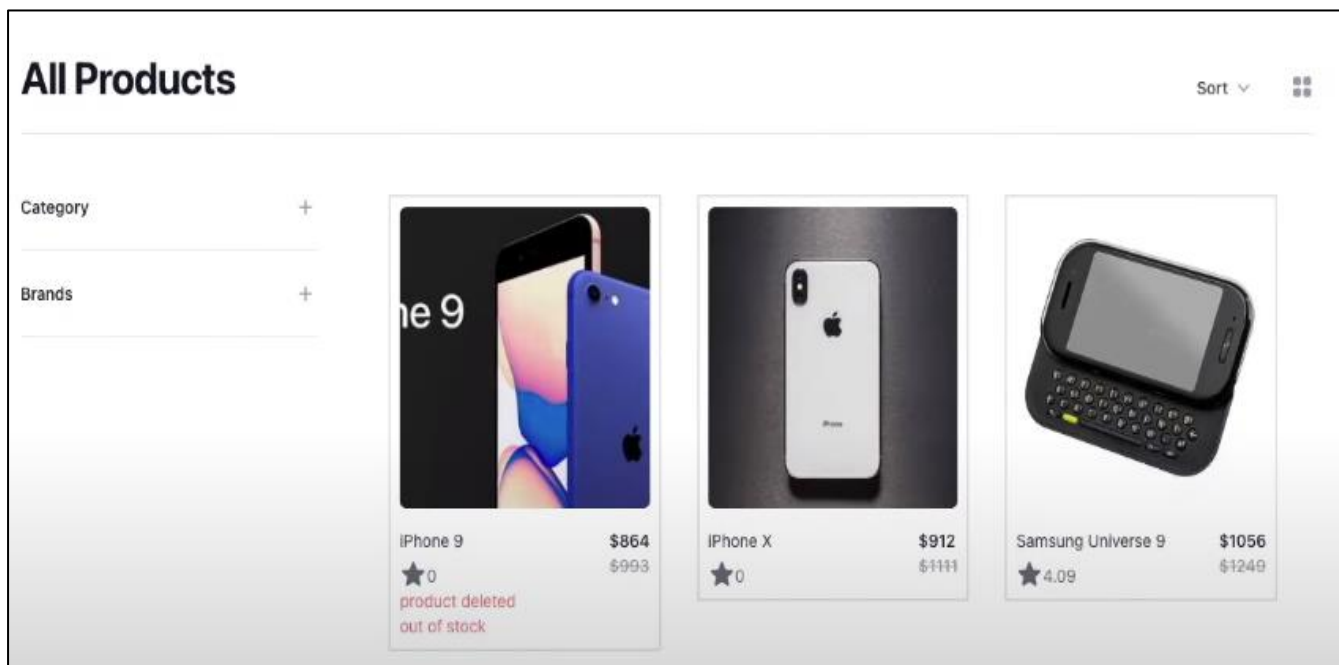
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## 4 Requirements & Functionality

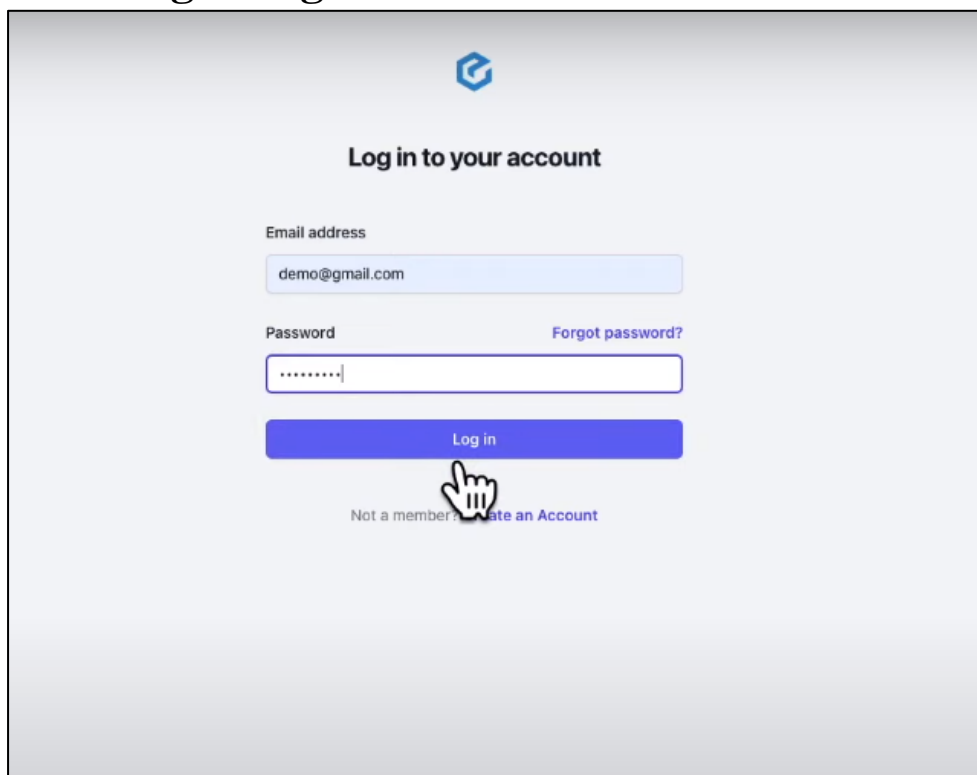
### 4.1 User Interface Requirement



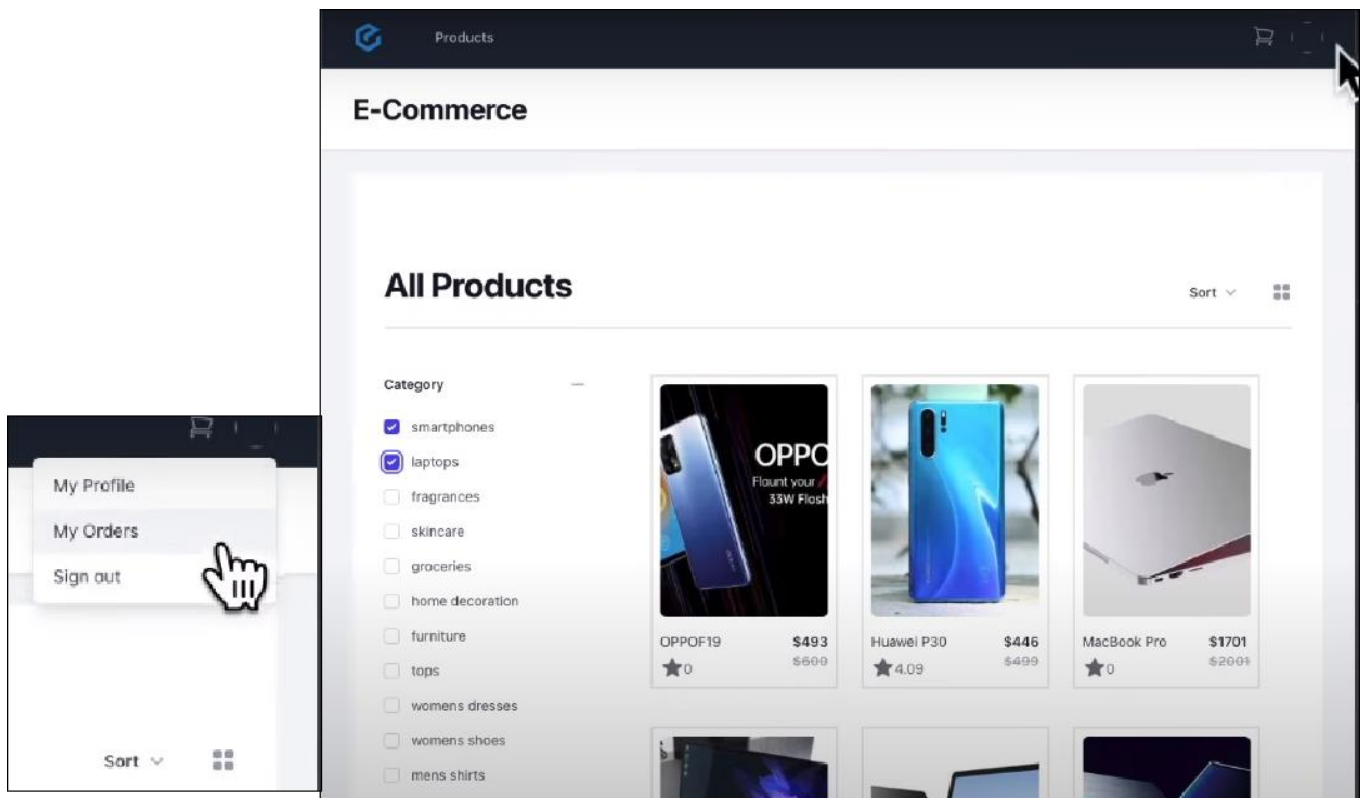
## 4.2 E-Commerce Platform



## 4.3 Login Page



## 4.4 Product List



4..5 Order Page

645ff63adaed73e67b0b022e

OPPO F19

~ #1 -

\$493

6460008dc7aaeb4376083c50

Huawei P30

~ #1 -

\$446

Abhishek R,  
11th Main,  
Banaglore,  
Karnataka,  
560034,  
123456788,


Abhishek R,  
11th Main,  
Banaglore,  
Karnataka,  
560034,  
123456788,

E-Commerce

My Orders

Order # 645e9de162d60871a3ffb768

Order Status : pending



Huawei P30

Huawei

Qty :1

Subtotal

\$ 446

Total Items in Cart

1 items

Shipping Address :

Abhishek R

11th Main  
560034

Phone: 1234567788  
Banaglore

cash

Pending



14/05/2023, 02:56:37

14/05/2023, 02:56:37

✓ Pending

Dispatched

Delivered



# 4.6 Cart

### Personal Information

Use a permanent address where you can receive mail.

Full name

Email address

Phone

Street address

City


State / Province

ZIP / Postal code

Reset

Add Address

### Cart



Huawei P30

Huawei

Qty 

1

Remove

Subtotal

\$ 446

Total Items in Cart

1 items

Shipping and taxes calculated at checkout.

Order Now

or Continue Shopping →

# 4.7 Cart

or continue shopping →

Checkout


Shipping and taxes calculated at checkout.

Total Items in Cart

2 items

Subtotal

\$ 1028




Qty 

1

Samsung Universe 2

Remove



Qty 

1

Huawei P30

Remove

Cart

## 4.8 Payment panel

Knowledge Base

Card number

1234 1234 1234 1234

VISA

Expiration

MM / YY

Visa

Visa \*\*\*\*0207

Expires on 05/29

Country

India

Visa

Visa \*\*\*\*5450

Expires on 02/28

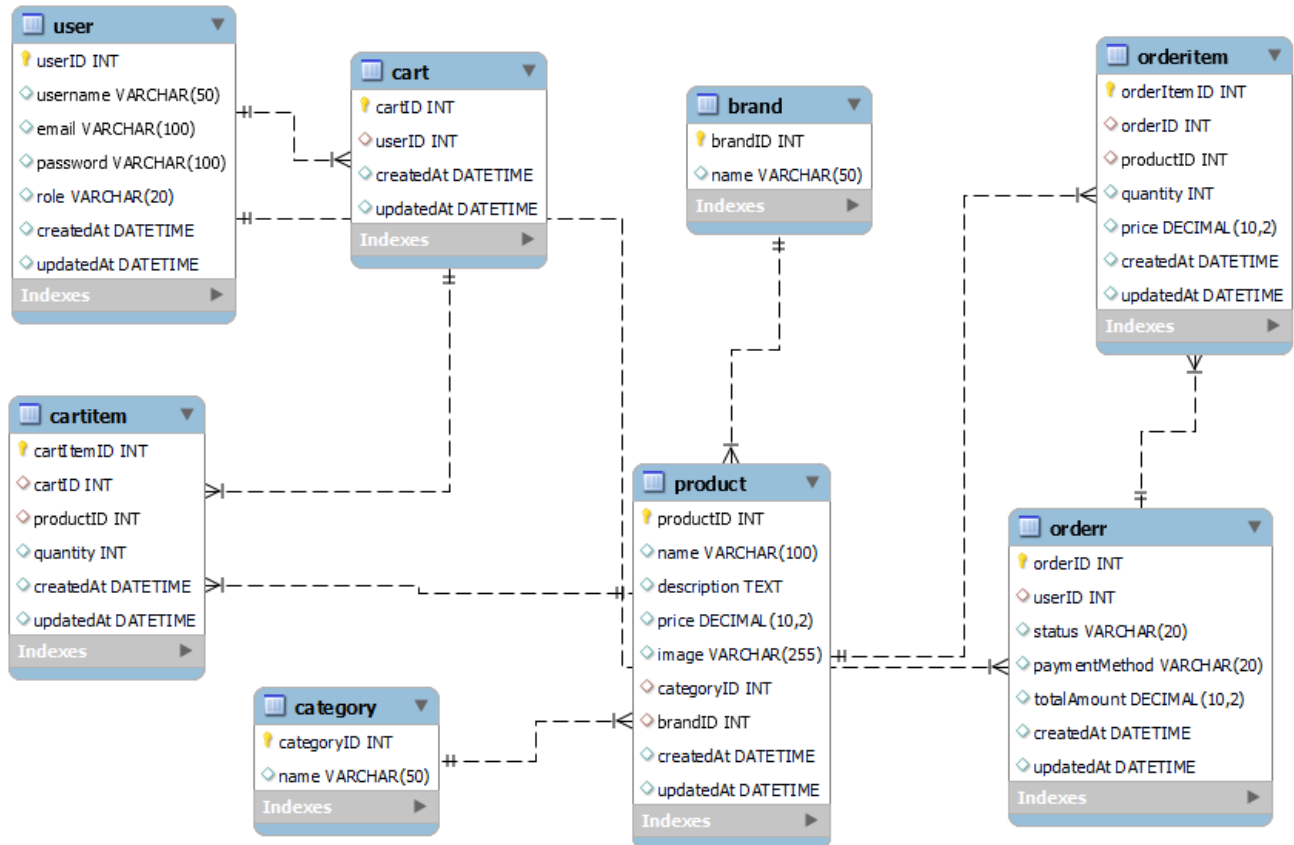
Manage Payment Methods...

Pay now

## 5. Database Design

The following table structures depict the database design.

### 5.1 ER Diagram





## 6. Testing:

The report of the testing is given here under.

Sr. No	Test Case Title	Description	Expected Outcome	Error Message	Result
1	Login Page	User should see login page when user will enter email and password.	After signing in user to be directed to home page	Invalid Login	Passed
2	Home page Displayed	Home page display for every successful log in.	Home Page Displayed	No Error	Passed
3	Categories Page	Users can see different categories of the products available.	Category to be selected.	No Error	Passed
4	My Orders Page	Here, user can see his all its order and can also cancel the order.	User can manage is order.	No Error	Passed
5	Contact Us	User can contact to the company.	User can write his problem to the company.	No Error	Passed
6	Checkout Page	User can review its product details.	After clicking on checkout user will place the order.	No Error	Passed
7	Sign Up	Should not allow any control to be empty if not null	If validated Allow to go to home page	Validation Error	Passed
8	Cart	User should be able to see its product details.	All product added to the cart be seen.	No error	Passed
9	Sign Out	User should be able to logout from the website	User will logout and will be redirected to the Sign In page.	No Error	Passed

## **7. Project Management Methodology: Scrum**

### **\*\*1. Project Initiation and Planning:**

- Define the project scope, objectives, and high-level requirements.
- Identify key stakeholders, including developers, designers, testers, and administrators.
- Create a product backlog by listing all the features, user stories, and tasks that need to be completed.

### **2. Sprint Planning:**

- Divide the project into time-bound iterations called "sprints." Since your project is complex, consider 2 to 4-week sprints.
- In sprint planning meetings, select a subset of tasks from the product backlog to work on during the upcoming sprint.
- Define the scope of each selected task and break them down into smaller sub-tasks.

### **3. Daily Standup Meetings:**

- Hold daily standup meetings (15 minutes) to ensure clear communication among the team members.
- Each team member answers three questions: What did I accomplish yesterday? What will I work on today? Are there any obstacles or challenges?

### **4. Sprint Execution:**

- Development, design, testing, and other tasks take place during the sprint.
- Developers work on the user stories and tasks they committed to during sprint planning.
- Designers create UI components and visuals, and testers perform continuous testing.

### **5. Review and Demo:**

- At the end of each sprint, conduct a sprint review meeting.
- Demo the completed features and functionalities to stakeholders and gather feedback.
- Use the feedback to make necessary adjustments and plan for the next sprint.

### **6. Sprint Retrospective:**

- Hold a sprint retrospective meeting to reflect on what went well, what could be improved, and any obstacles encountered.
- Discuss and implement process improvements for the next sprint.

## 7. Backlog Refinement:

- Continuously refine and prioritize the product backlog.
- Add new features, user stories, and tasks as they emerge, and remove or modify existing items based on feedback and changing requirements.

## 8. Scaling:

- If needed, scale Scrum to include multiple teams working on different components.
- Implement techniques like Scrum of Scrums for coordinating and aligning work between teams.

## Advantages of Scrum for Your E-commerce Project:

- **Flexibility:** Scrum's iterative approach allows for changes and adjustments as the project progresses.
- **Adaptability:** The ability to prioritize and modify tasks in response to evolving customer needs and market demands.
- **Regular Feedback:** Frequent demos and reviews ensure that the project stays aligned with stakeholder expectations.
- **Continuous Improvement:** Sprint retrospectives promote learning and process enhancement.
- **Transparency:** Scrum provides clear visibility into the project's progress through daily standup meetings and sprint reviews.

Remember that while Scrum can be a strong fit for your project, its success relies on effective communication, collaboration, and commitment from all team members. Adapt the methodology to suit your team's dynamics and the project's unique requirements.

# Chapter 8: Conclusion and Future Enhancements

In this chapter, we wrap up our comprehensive e-commerce project by reflecting on its achievements, impact, and significance. We also explore the lessons learned throughout the development process and outline potential future enhancements that can further elevate the platform.

## 8.1 Conclusion

Our e-commerce project has reached its culmination, showcasing the successful integration of cutting-edge technologies to create a robust and user-friendly online shopping experience. This platform stands as a testament to the capabilities of modern web development tools and practices.

## 8.2 Impact and Significance

The impact of our e-commerce project extends beyond its technical prowess. It demonstrates the potential of React, Redux, MongoDB, Stripe, and other tools to shape the future of online retail. By providing a seamless shopping journey coupled with secure payment options, we've contributed to enhancing user experiences in the digital marketplace.

### 8.3 Lessons Learned

Throughout the project's lifecycle, we encountered challenges, made informed decisions, and gained valuable insights. These lessons have not only contributed to the successful completion of our platform but will also inform our approach to future projects. Embracing the knowledge gained ensures that our development practices continue to evolve.

### 8.4 Future Enhancements

As technology continues to evolve, our e-commerce platform holds the potential for exciting future enhancements:

- **Personalization:** Implement advanced algorithms to offer personalized product recommendations tailored to each user's preferences and browsing behavior.
- **Enhanced Admin Panel:** Expand the capabilities of the admin panel to include features such as advanced order tracking, real-time inventory management, and comprehensive analytics.
- **Mobile Application:** Extend the platform's accessibility by developing a dedicated mobile application, enabling users to shop conveniently on their devices.
- **Global Reach:** Incorporate localization features to cater to a diverse global user base, including support for multiple languages, currencies, and regional preferences.

The completion of our e-commerce project marks a significant milestone in our journey of technical exploration and innovation. We've embarked on a dynamic venture that fuses modern technologies, user-centric design, and robust functionalities into a unified platform. As we close this chapter, we extend our gratitude to all team members who contributed their expertise, dedication, and creativity to bring this project to fruition. This documentation serves as a testament to the power of collaboration, the potential of technology, and the art of crafting digital experiences that resonate with users. With a comprehensive understanding of the project's features, technical intricacies, and future possibilities, we look forward to the impact this e-commerce platform will have on its users and the digital landscape at large.