Noakhali Science & Technology University
Department of Computer Science & Telecommunication Engineering

Project Proposal

Course Code: CSTE 3206

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Project Title: Online Shopping System

Problem Statement

The growth of online shopping has created a demand for e-commerce platforms that provide seamless, secure user experiences. Many existing platforms face challenges with user experience, product management, and order tracking. Additionally, they often lack flexibility in payment options and administrative controls. This project aims to develop a web-based e-commerce application that enables users to browse, purchase products, and manage orders easily. It will provide administrators with full control over products and orders, and offer flexible payment options, including secure online payments via Stripe. This solution will improve both the user shopping experience and administrative efficiency.

Objectives

- Develop an E-commerce Web Application to enable users to shop online, view products, and complete purchases.
- Provide an intuitive and seamless shopping experience with features such as product browsing, cart management, and order placement.
- Create an admin panel to allow administrators to efficiently manage the product catalog, and user orders.
- Implement an optional payment feature using Stripe for secure online transactions, allowing users to place orders without immediate payment.
- Ensure the application is responsive, scalable, and easy to maintain, offering an optimal experience for both users and administrators.

Flexibility Study

The web application will be designed to be flexible and adaptable to different use cases and requirements:

- **User-side Flexibility:** Users will be able to browse products, filter by categories, add items to the shopping cart, and complete purchases. The interface will be responsive, ensuring a smooth experience on various devices.
- **Admin-side Flexibility:** Administrators will have full control over the product catalog, categories, and orders. They will be able to easily add, update, or remove products, as well as manage orders placed by users.
- **Payment Flexibility:** The payment feature will be optional, allowing users to place orders without the need for immediate payment. However, Stripe integration will be available as an optional feature for users who wish to make secure online payments.

Technology

This project will utilize the following technologies and tools to develop the E-commerce web application:

Frontend:

- **React.js** for dynamic and responsive user interface.
- **Tailwind CSS** for utility-first CSS styling to ensure responsive design and maintainable code.

Backend:

- **Node.js** with **Express.js** for handling backend logic, routing, and API development.
- **MySQL** database for data storage and management, using any **ORM** (for Node.js) for easy database interaction and schema management.
- **Laravel** may be considered as an alternative backend framework.

Payment Integration (Optional):

- **Stripe** for integrating secure online payment options (optional for the current version).

Features

User:

- **Login/Registration:** Users sign in and sign up.
- **Browse Products:** Users can view and filter products by category.
- **Add to Cart:** Users add products to the cart and adjust quantities.
- **Checkout:** Users confirm order details, choose payment method (optional), and proceed with order confirmation.

Admin:

- **Login:** Admins access the panel with credentials.
- **Product Management:** Admins can add, edit, or delete products.
- **Order Management:** Admins view and update order statuses.
- **User Management:** Admins manage user accounts and permissions.

User Interaction Diagram

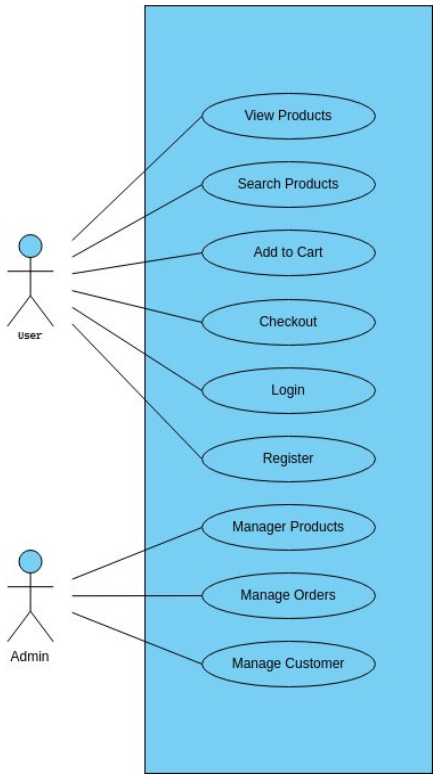
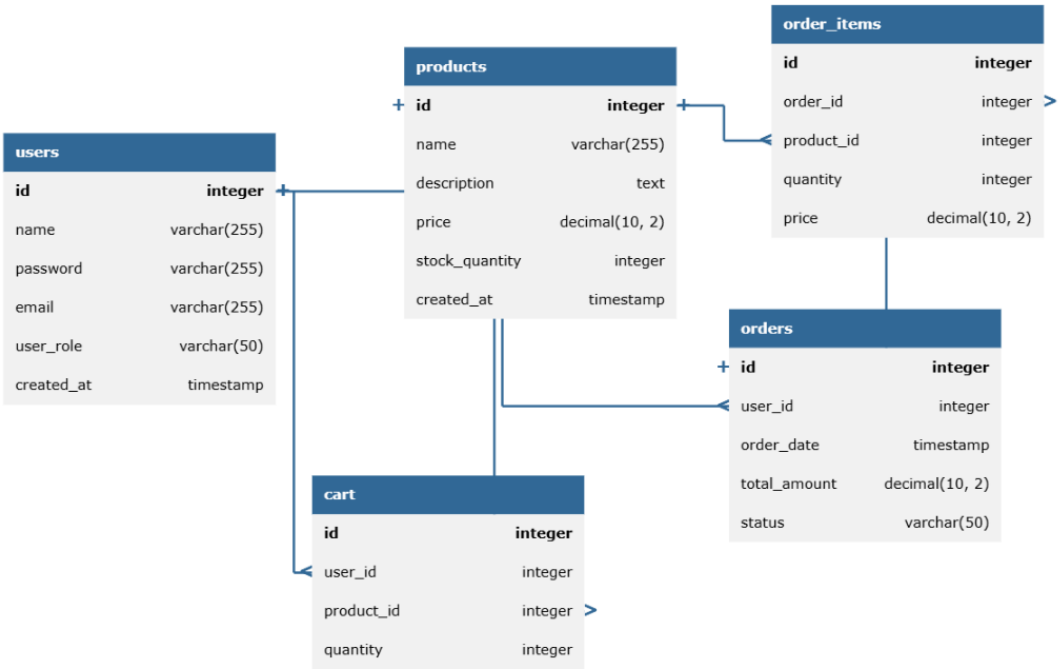
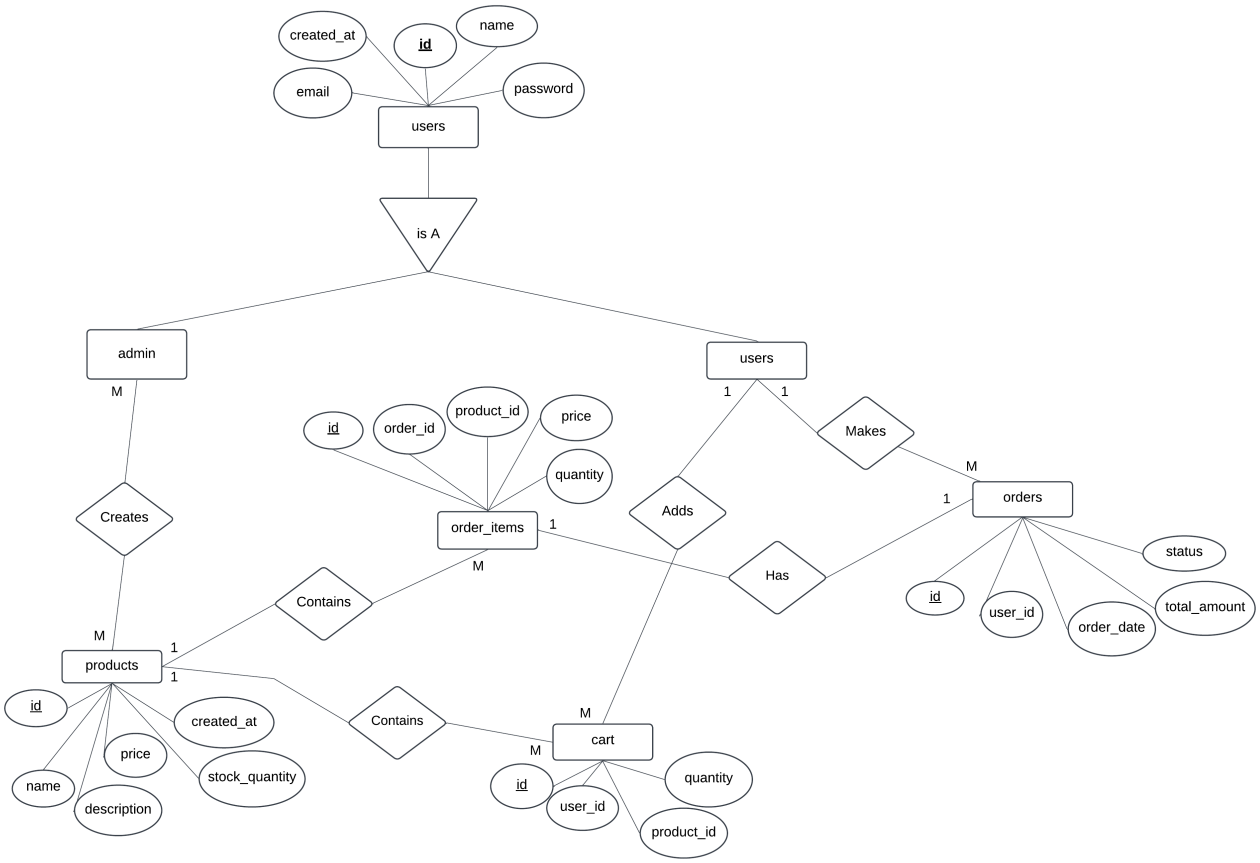


Figure 1: User Interaction Diagram

ER Schema



ER diagram



Conclusion

This E-commerce Web Application offers a comprehensive solution for users to shop online, providing them with an intuitive and secure platform to browse, add products to the cart, and place orders. The flexible system allows admins to efficiently manage product catalogs, categories, and customer orders, ensuring a smooth and effective operational flow. The inclusion of an optional payment system, along with the potential future integration of Stripe for secure payments, further enhances the flexibility of the platform.

By addressing key challenges in the e-commerce domain, such as user experience, product management, and payment flexibility, this project demonstrates a robust solution for building an online store. The application is designed to be scalable, user-friendly, and maintainable, providing both customers and administrators with the tools they need for an optimal shopping experience.