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Code&Documentations link on github:

https://github.com/Eldeep1/fullStack_eCommerce/tree/main

E-Commerce Website

1.Introduction

1.1) Purpose:

The purpose of this document is to provide a detailed description of the E-Commerce Website.It'll explain the purpose and features of the Website, it's features, and how it will function.

1.2) Scope:

The scope of an E-Commerce website extends across a spectrum of features and functionalities designed to facilitate online transactions and optimize user experience. At its core, an E-Commerce platform encompasses product catalog management, user authentication, and a seamless shopping cart and checkout process. Beyond these fundamentals, the scope broadens to include comprehensive user management systems, integrating customer profiles, order history, and personalized recommendations. Payment gateway integration ensures secure transactions, while shipping and tax calculation functionalities streamline the purchasing journey.

Functional Requirements:

1-The System allows users to register on the website, through by creating a new account.

2-The System allows users with an account on the website to be capable of logging into the website.

3-Password reset functionality should be available for forgotten passwords.

4-Product listings should display essential information such as price, images, descriptions, and availability.

5-Users should be able to browse products by category, brand, or other attributes.

6-Users should be able to add products to their shopping cart.

7-Users should be able to view and modify the contents of their shopping cart.

8-The shopping cart should persist across sessions until the user completes the purchase or removes items.

9- Cart displays detailed information about each item, including price, quantity, and subtotal.

10-Users should be able to search for products using keywords or phrases.

11-Search results should be relevant and displayed in a user-friendly manner.

12- Users should be able to add products to a wishlist or save them for later.

13- Wishlist items should be persistent and tied to the user's account.

14- Users should be guided through a seamless checkout process.

15- The checkout process should include steps for providing shipping and billing information, selecting shipping and payment methods, and reviewing the order before finalizing the purchase.

16- Users should receive confirmation message after completing their orders.

17- Users should be able to view their order history and track the status of their orders.

18- Users can view product details and profile details.

19- The system Support for discount codes, coupons, and promotional offers to incentivize purchases.

20- The admin can add product.

21- The admin can view orders.

22- The admin can add admin and update order status.

Non-Functional Requirements:

Performance:

The website should be fast and responsive, with quick load times and minimal downtime or errors

Useability:

The system shall have a user-friendly interface.

The system shall be easy to use by different users.

Reliabilty:

The system shall be reliable and do not have data validation failures.

Interface:

The system must be with a good interface, any user can understand it.

Look and Feel:

The system shall be painted in comfortable colors for the eyes.

Maintainability:

system shall be easy to change/ update.

Security:

The system shall ensure that only authorized users are able to gain access.

The system shall distinguish between authorized and non- authorized users.

Data integrity:

system shall be described by accuracy, completeness, and consistency of data mean safety of data and security.

Availability:

The system shall be available 24 hours in a day.

User Interface:

Homepage:

Visually appealing layout featuring high-quality images and engaging graphics.

Clear navigation menu with featured products.

Search bar prominently displayed for quick product search.

Product Listings:

Grid or list view displaying product thumbnails, names, and prices.

Pagination or infinite scrolling for browsing through multiple pages of products.

Product Detail Pages:

Detailed product information including descriptions, specifications,

and pricing**.**

High-resolution images or product galleries showcasing different angles and features.

Call-to-action buttons for adding items to the shopping cart.

Shopping Cart:

Clear summary of items in the cart, including thumbnails, names, prices, quantities, and subtotals.

Ability to update quantities, remove items, or proceed to checkout

Checkout Process:

Step-by-step checkout process with progress indicators (e.g., cart review, shipping address, payment).

Clearly labeled form fields for entering shipping and billing information.

Summary of the order with a breakdown of costs before finalizing the purchase.

Navigation and Search:

Consistent and intuitive navigation menu with dropdowns for easy access to different sections of the website.

Breadcrumb navigation to show users their current location within the site hierarchy.

Profile:

User can view his profile details, including username, first name, last name, and email.

View Orders:

The user is able to view his orders, including its status, total price, products within the order.

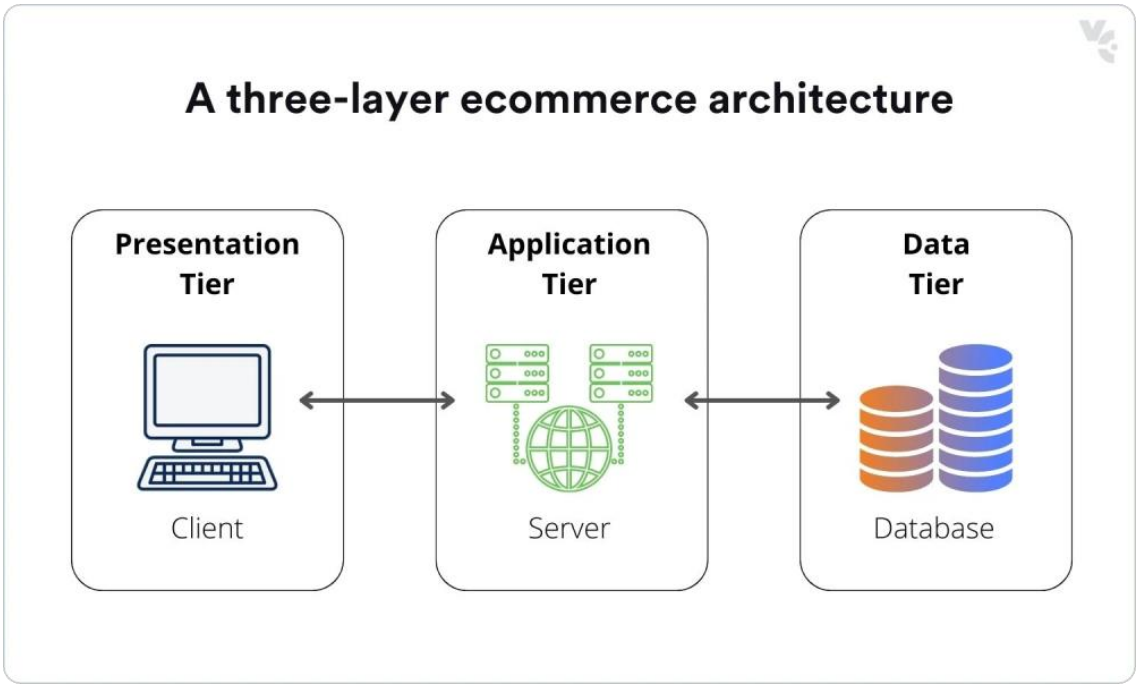
Admin Dashboard:

Admin has the ability to add new product

Admin has the ability to add new admin

Admin has the ability to view all users' orders

Architecture:



1. **Presentation Tier (Client Tier)**:

   The UI layer: is what the user interacts with. It includes the design, layout, and functionality of the website.

   Components: such as product listings, search bars, filters, shopping carts, and checkout forms are part of the UI.

   Technologies used: here include HTML for structure, CSS for styling, and JavaScript for interactivity.

   In client-side rendering, the browser loads a basic HTML file and the JavaScript fetches data from the server and renders the UI dynamically.

   In server-side rendering, the server generates the HTML content and sends it to the client, reducing the initial page load time.

2. **Application Tier (Server Tier)**:
    - **Web Server**: Handles HTTP requests from clients and serves dynamic content.
    - **Application Logic**: Implements business logic, manages user sessions, authentication, authorization, and handles requests from the client side.
    - **APIs**: Exposes endpoints for client-server communication, allowing the front end to interact with the back end.
    - **Components**: Shopping cart management, product catalog, user management, order processing, payment gateway integration, etc.
    - **Technologies used**: Server-side languages like Java (with Spring Boot).
3. **Data Tier (Database Tier):**

    Database Management System (DBMS): Stores and manages structured data related to users, products, orders, etc.

    Product Database: Stores information about the products available for sale.

    User Database: Stores user profiles, preferences, and order history.

    Order Database: Stores information about orders, including status and transaction details.

    Cart Database: Stores information a bout carts.

    Session Storage: Stores temporary session data for users who are currently interacting with the website.

    Technologies used: Relational databases MySQL.