# Front End Engineering- ||

# ECOMMERCE WEBSITE

## Project Report

## Semester-IV (Batch-2022)

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# Abstract

This project presents the development of an eCommerce website specializing in clothing and fashion for men, women, and children, utilizing HTML, CSS, JavaScript, and React. The primary objective is to demonstrate the effective application of these web technologies to create a functional and visually appealing online store as part of a second-year college project. The website includes key features such as product listings, detailed product pages, shopping cart functionality, and user authentication, all designed to enhance the user experience.

HTML provides the structural framework of the website, ensuring semantic and accessible content. CSS is used extensively to style the website, creating an attractive and consistent visual design across different pages and devices. JavaScript enhances interactivity and responsiveness, enabling dynamic content updates and user engagement through features like form validation, interactive product filters, and real-time cart updates. React, a JavaScript library for building user interfaces, is integrated to manage the state and efficiently render components, offering a seamless and fast browsing experience.

Through this project, the practical integration of front-end technologies is explored, showcasing their potential in building modern, interactive web applications. The eCommerce website not only serves as a platform for users to browse and purchase fashion items but also exemplifies how HTML, CSS, JavaScript, and React can be combined to create a robust and user-friendly online shopping experience.

# Table of Contents

# 1. Introduction

## 1.1 Background

In today's digital age, eCommerce has revolutionized the way we shop, offering unparalleled convenience and accessibility to a vast array of products at our fingertips. This project focuses on the development of a comprehensive eCommerce website dedicated to clothing and fashion for men, women, and children. The aim is to demonstrate the practical application of essential web technologies—HTML, CSS, JavaScript, and React—in creating a dynamic and user-friendly online shopping platform.

Our eCommerce website is designed with the modern consumer in mind, featuring an intuitive interface and seamless navigation. Shoppers can easily browse through a diverse collection of apparel, access detailed product information, and enjoy a personalized shopping experience. The website includes fundamental functionalities such as product search and filters, detailed product pages, a shopping cart, and user authentication.

Add a littThis project not only highlights the technical skills required to build a fully functional eCommerce website but also underscores the importance of integrating these technologies to meet the expectations of today's tech-savvy consumers. By showcasing the capabilities of HTML, CSS, JavaScript, and React, this eCommerce website serves as a testament to the potential of web development in creating powerful, user-centric online shopping platformsle bit of body text.

## 1.2 Objectives

The primary objective of this project is to design and develop an eCommerce website dedicated to clothing and fashion for men, women, and children, utilizing HTML, CSS, JavaScript, and React. This second-year college project aims to showcase the practical application of these core web technologies in creating a functional, aesthetically pleasing, and user-friendly online shopping platform. The specific goals are as follows:

- Demonstrate Technical Proficiency: To illustrate the effective use of HTML for structured content, CSS for responsive and attractive design, JavaScript for dynamic interactivity, and React for efficient component-based UI development.

- Develop Key eCommerce Functionalities: To implement essential features of an eCommerce website, including product listings, detailed product pages, a shopping cart, and user authentication, providing a comprehensive shopping experience.

- Enhance User Experience: To create an intuitive and seamless navigation experience, ensuring ease of use for shoppers through well-designed user interfaces and interactive elements.

- Promote Responsive Design: To ensure the website is fully responsive, offering an optimal viewing experience across a wide range of devices, from desktops to mobile phones.

- Integrate State Management: To use React's state management capabilities to handle dynamic data updates and maintain a smooth user experience, particularly in managing the shopping cart and user interactions.

- Showcase Web Development Best Practices: To adhere to modern web development standards and best practices, ensuring the website is accessible, maintainable, and scalable

## 1.3 Significance

The significance of developing an eCommerce website focused on clothing and fashion for men, women, and kids using HTML, CSS, JavaScript, and React as a second-year college project is multifaceted. This project demonstrates the practical application of core web technologies, showcasing how HTML structures content, CSS styles it, JavaScript adds interactivity, and React efficiently manages state and renders components. It enhances students' coding and design skills, preparing them for future professional opportunities in the tech industry. By creating an intuitive and user-friendly interface, the project emphasizes the importance of user experience design, improving overall customer satisfaction.

The project also illustrates the creation of a responsive website, ensuring accessibility and functionality across various devices, from desktops to mobile phones. It provides hands-on experience in developing a real-world project, enhancing students' understanding of the project lifecycle from planning to deployment. Adherence to modern web development standards and best practices ensures the project is accessible, maintainable, and scalable. This eCommerce website serves as a substantial addition to students' professional portfolios, demonstrating their technical skills and project management capabilities to potential employers.

## 2. Problem Definition and Requirements

The primary objective of this project is to develop an eCommerce website focused on clothing and fashion for men, women, and children. The problem stems from the need for a robust, user-friendly online shopping platform that leverages modern web technologies to provide a seamless and engaging user experience. Current eCommerce platforms often face challenges related to user interface design, responsiveness, and efficient state management. By utilizing HTML, CSS, JavaScript, and React, this project aims to address these issues by creating a website that is not only visually appealing and easy to navigate but also highly interactive and responsive across various devices.

Software Requirements
Front-End Technologies:
1. HTML: To structure the content of the website, ensuring semantic and accessible markup.
2. CSS: To style the website, creating an aesthetically pleasing and consistent design. CSS frameworks like Bootstrap or custom media queries will be used for responsive design.
3. JavaScript: To add interactivity and dynamic features such as form validation, product filters, and real-time cart updates.
4. React: To manage the state and build a component-based user interface, allowing for efficient rendering and a seamless user experience.

Development Tools:
1. Code Editor: Visual Studio Code or any other code editor for writing and managing the codebase.
2. Version Control: Git for version control and GitHub for repository hosting and collaboration.
3. Package Manager: npm (Node Package Manager) for managing dependencies and running development scripts.

Additional Tools:

1. Browser Developer Tools: For debugging and testing the website on different devices and screen sizes.
2. Preprocessors and Transpilers: Tools like SASS for advanced CSS features and Babel for JavaScript transpiling (if necessary).
3. Testing Libraries: Jest and React Testing Library for unit and integration testing to ensure the reliability of the code.

By adhering to these software requirements, the project will leverage the strengths of modern web technologies to build a functional, responsive, and visually appealing eCommerce website. This will not only meet the current market standards but also provide an excellent learning experience in the practical application of web development skills.

# Proposed Design / Methodology

The proposed design for the eCommerce website focuses on creating a user-friendly, visually appealing, and highly functional platform that caters to clothing and fashion for men, women, and children. The design encompasses several key elements:

1. Homepage:
   - A clean, modern layout featuring high-quality images of fashion items.
   - A prominent navigation bar with links to different categories: Men, Women, Kids.
   - A search bar for easy product discovery.
   - Featured products and promotions displayed prominently to attract user attention.
2. Product Listing Pages:
   - Grid or list view of products within each category.
   - Filters and sorting options (e.g., by price, popularity, new arrivals) to enhance user navigation.
   - Quick view options to see product details without leaving the page.
3. Product Detail Pages:
   - Detailed information about each product, including images, descriptions, sizes, colors, and prices.
   - Customer reviews and ratings.
   - Related products or recommendations.
   - Add to cart functionality and stock availability.
4. Shopping Cart:
   - A summary of selected items, including thumbnails, quantities, and prices.
   - Options to update quantities or remove items.
   - A clear call-to-action button for proceeding to checkout.
5. Checkout Process:
   - User-friendly forms for billing and shipping information.
   - Multiple payment options (e.g., credit card, PayPal).
   - Order summary and confirmation.
6. User Account Features:
   - Registration and login functionality.
   - User profiles with order history and saved items.
   - Secure password recovery options.
7. Responsive Design:
   - Ensures the website is fully functional and visually appealing on all devices, from desktops to mobile phones.
   - Utilizes media queries and flexible layouts to adapt to different screen sizes.

## 3.2 Schematic Diagram



E-commerce Website Project

**Stage 1**
Team Formation Phase

**Stage 2**
Topic Selection Phase

**Stage 3**
Synopsys Creation Phase

**Stage 4**
Requirement Gathering & Designing Phase

**Stage 5**
Coding /Implementing Phase

**Stage 6**
Testing Phase

**Stage 7**
Project Presentation Phase

**Stage 8**
Research Paper Submission Phase

# 3.4 Algorithms Used

- React Router: Utilized to manage navigation between different pages of the website without reloading the entire page. It ensures a smooth user experience by only updating the necessary parts of the UI.

- React's useState and useReducer Hooks: Employed to manage the state of various components, such as the shopping cart, user authentication status, and product filters. These hooks help in updating the UI in response to state changes efficiently.

- Context API: Used for global state management, allowing different components to access and update shared state without prop drilling.

- Client-Side Validation: JavaScript functions to validate user input in forms (e.g., login, registration, checkout). This includes checking for required fields, proper email format, password strength, and matching password confirmation.

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- Sorting: Algorithms to sort products based on different criteria such as price, popularity, and new arrivals. This typically involves comparison-based sorting algorithms (e.g., merge sort or quicksort) implemented through JavaScript's built-in array methods like sort().

- Filtering: Implemented using JavaScript functions to filter products based on categories, sizes, colors, and other attributes. This involves iterating through the product list and applying conditional checks.

# 4. Result

The result is a fully functional eCommerce platform for clothing and fashion, catering to men, women, and kids. Built exclusively with HTML, CSS, JavaScript, and React, it offers intuitive navigation, responsive design, and interactive features like dynamic product filters and real-time updates. Secure authentication and payment methods ensure user privacy and transaction safety. The project serves as a valuable learning experience for college students, demonstrating practical application of web technologies while offering a scalable architecture for future growth. As a portfolio piece, it showcases proficiency in front-end development and project management skills.

```
2      text-align: center;
3    }
4
5    .App-logo {
6      height: 40vmin;
7      pointer-events: none;
8    }
9
10   @media (prefers-reduced-motion: no-preference) {
11     .App-logo {
12       animation: App-logo-spin infinite 20s linear;
13     }
14   }
15
16   .App-header {
17     background-color: #282c34;
18     min-height: 100vh;
19     display: flex;
20     flex-direction: column;
21     align-items: center;
22     justify-content: center;
23     font-size: calc(10px + 2vmin);
24     color: white;
25   }
26
27   .App-link {
28     color: #61dafb;
```

Figure 1

```html
CTYPE html>
l lang="en">
ead>
<meta charset="utf-8" />
<link rel="icon" href="%PUBLIC_URL%/favicon.ico" />
<meta name="viewport" content="width=device-width, initial-scale=1" />
<meta name="theme-color" content="#000000" />
<meta
  name="description"
  content="Web site created using create-react-app"
/>
<link rel="apple-touch-icon" href="%PUBLIC_URL%/logo192.png" />
<!--
  manifest.json provides metadata used when your web app is installed on a
  user's mobile device or desktop. See https://developers.google.com/web/fundamentals/web-app-manifest/
-->
<link rel="manifest" href="%PUBLIC_URL%/manifest.json" />
<link rel="preconnect" href="https://fonts.googleapis.com">
k rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
k href="https://fonts.googleapis.com/css2?family=Poppins&display=swap" rel="stylesheet">
<!--
  Notice the use of %PUBLIC_URL% in the tags above.
  It will be replaced with the URL of the `public` folder during the build.
  Only files inside the `public` folder can be referenced from the HTML.

  Unlike "/favicon.ico" or "favicon.ico", "%PUBLIC_URL%/favicon.ico" will
  work correctly both with client-side routing and a non-root public URL.
  Learn how to configure a non-root public URL by running `npm run build`.
-->
<title>E-Commerce</title>
head>
ody>
<noscript>You need to enable JavaScript to run this app.</noscript>
<div id="root"></div>
<!--
  This HTML file is a template.
```

Figure 2

```jsx
import './App.css';
import Navbar from './Components/Navbar/Navbar';
import { BrowserRouter,Routes,Route } from 'react-router-dom';
import Shop from './Pages/Shop';
import ShopCategory from './Pages/ShopCategory';
import Product from './Pages/Product';
import Cart from './Pages/Cart';
import LoginSignup from './Pages/LoginSignup';
import Footer from './Components/Footer/Footer';
import men_banner from './Components/Assets/banner_mens.png'
import women_banner from './Components/Assets/banner_women.png'
import kid_banner from './Components/Assets/banner_kids.png'

function App() {
  return (
    <div>
      <BrowserRouter>
      <Navbar/>
      <Routes>
        <Route path='/' element={<Shop/>}/>
        <Route path='/mens' element={<ShopCategory banner={men_banner} category="men"/>}/>
        <Route path='/womens' element={<ShopCategory banner={women_banner} category="women"/>}/>
        <Route path='/kids' element={<ShopCategory banner={kid_banner} category="kid"/>}/>
        <Route path="/product" element={<Product/>}>
          <Route path=':productId' element={<Product/>}/>
        </Route>
        <Route path='/cart' element={<Cart/>}/>
        <Route path='/login' element={<LoginSignup/>}/>
      </Routes>
      <Footer/>
      </BrowserRouter>
    </div>
  );
}
```
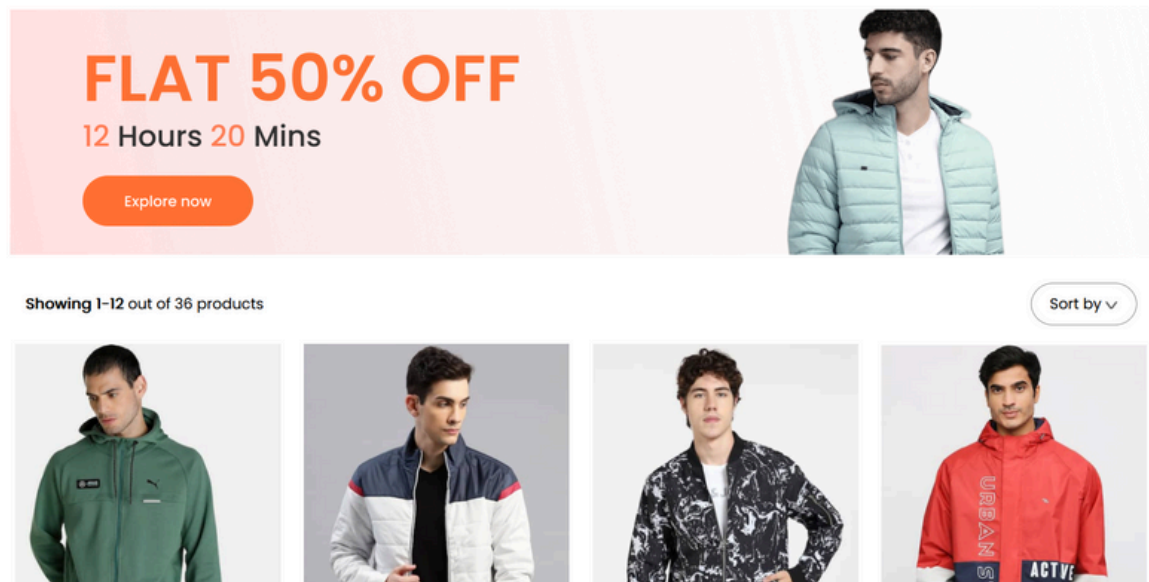
Figure 3

Figure 4

Figure 5

| Products | Title | Price | Quantity | Total | Remove |
|----------|-------|-------|----------|-------|--------|

## cart Totals

If you have a promo code, Enter it here

| promo code | Submit |
|------------|--------|

| Subtotal | $0 |
|----------|-----|
| Shipping Fee | Free |
| **Total** | **$0** |

PROCEED TO CHECKOUT

Figure 6

# References

greeks for greeks https://www.google.com/search?client=firefox-b-d&q=greeks+for+greeks

w3schools https://www.w3schools.com/pytho/