

**MURANG’A UNIVERSITY OF TECHNOLOGY**

**SCHOOL OF COMPUTING AND INFORMATION TECHNOLOGY**

**DEPARTMENT OF INFORMATION AND TECHNOLOGY**

SCS 203; PROGRAMMING AND DATABASE PRACTICUM

SECOND YEAR PROJECT PROPOSAL

**ECOMMERCE SYSTEM**

BY

WANJIRU PETER NJIHIA

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Bachelor of Science in Information Technology

*A second-Year project proposal submitted to the Department of Information Technology in partial fulfilment of the requirements for a Bachelor of Science Degree in Information Technology*

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# Declaration

I certify that this project proposal is my original work and that the citations have been done effectively when other sources were included in my study. The data thereby presented in this document is accurate.

Signature: ………………………………. Date: …………………

PETER NJIHIA WANJIRU

SC211/0540/2022

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# ABSTRACT

The E-commerce Shoe Store project aims to address the contemporary challenges faced by shoe enthusiasts in finding and purchasing their desired footwear online. This comprehensive online platform offers a diverse range of shoe types, styles, and brands, catering to the varying preferences and needs of customers.

Key features of the E-commerce Shoe Store include a user-friendly interface, seamless navigation, secure payment options, and responsive customer support. The project leverages innovative technologies and user-centric design principles to provide an immersive and personalized shopping experience for users.

# CHAPTER 1: INTRODUCTION

## BACKGROUND

The evolving landscape of online commerce, driven by the ever-expanding reach of the internet and technological advancements, has catalyzed a surge in demand for convenient platforms catering to diverse consumer needs. Within this dynamic environment, ecommerce websites specializing in the sale of various types of shoes have emerged as indispensable hubs for footwear enthusiasts and casual shoppers alike. Traditionally, purchasing shoes involved visiting physical stores or browsing through catalogs. However, the digital age has revolutionized this process, offering consumers unprecedented access to a vast array of footwear options at their fingertips. Historically, shoe shopping was confined to brick-and-mortar stores, limiting the choices available to consumers. However, the advent of ecommerce has transformed the shopping experience, enabling customers to explore an extensive selection of shoes from the comfort of their homes. Research indicates a steady increase in online shoe purchases, driven by factors such as convenience, variety, and competitive pricing. As consumers navigate their busy lives, the ability to browse, compare, and purchase shoes online offers a compelling alternative to traditional shopping methods. The influence of technology on consumer behavior cannot be overstated. With the widespread adoption of smartphones and the internet, consumers are increasingly turning to online platforms for their shopping needs. This shift has created immense opportunities for ecommerce websites specializing in shoes to thrive and innovate. Psychological studies suggest that online shopping can elicit feelings of excitement, satisfaction, and empowerment in consumers. The convenience of browsing through a diverse range of shoe styles and brands at any time of day contributes to a positive shopping experience, enhancing overall well-being. Analysis of market trends and consumer preferences underscores the importance of offering a seamless and engaging online shopping experience. Customers expect intuitive navigation, detailed product information, secure payment options, and efficient customer service from ecommerce websites specializing in shoes. The driving force behind the development of a comprehensive ecommerce platform for shoe sales lies in understanding the intersection of consumer behavior, technological advancements, and the desire for convenience and variety. By prioritizing user-centric design and functionality, the project aims to create a compelling and adaptable online shopping destination for footwear enthusiasts worldwide.

## PROBLEM DEFINITION

The establishment of our ecommerce platform for shoe sales is grounded in the practical recognition of the escalating need for individuals to procure and manage a diverse array of footwear effectively. In today's bustling world, consumers face a myriad of demands and preferences when it comes to their shoe selection, necessitating a streamlined solution for navigating this complex landscape. With the pervasive influence of digital technology and the omnipresence of online connectivity, the internet has become the go-to resource for sourcing and purchasing footwear. As consumers seek convenience and variety in their shoe shopping experience, the significance of an ecommerce platform specializing in different types of shoes cannot be overstated. The challenge lies in providing a seamless and intuitive online shopping experience that caters to the diverse needs and preferences of customers. Traditional methods of purchasing shoes, such as visiting physical stores or perusing limited catalogs, often fall short in meeting the demands of today's discerning shoppers. Thus, there is a clear imperative for an ecommerce platform that not only offers a wide range of shoe styles and brands but also incorporates features for easy navigation, detailed product information, secure transactions, and responsive customer service. Our initiative to develop an ecommerce platform for shoe sales is driven by a deep understanding of the evolving dynamics of consumer behavior and technological advancements. By leveraging innovative digital solutions and prioritizing user-centric design, we aim to create a destination where customers can effortlessly explore, compare, and purchase different types of shoes, ensuring a gratifying shopping experience for all.Top of Form

## OBJECTIVES

### General Objective

The objective of the ecommerce shoe website project is to create a user-friendly and comprehensive platform that facilitates the seamless exploration and purchase of various types of shoes, catering to the diverse needs and preferences of consumers in an online environment.

### Specific Objectives

1. Develop an Intuitive User Interface: Design an interface that is visually appealing, easy to navigate, and provides an intuitive browsing experience for customers seeking different types of shoes.
2. Implement Comprehensive Product Features: Integrate a range of features that enable customers to explore detailed product information, filter options based on shoe type, size, brand, and other relevant criteria, and compare different shoe styles effectively.
3. Enable Due Date Notifications: Implement a notification system that alerts customers about upcoming promotions, limited-time offers, or restocks of popular shoe models to enhance their shopping experience and encourage timely purchases.

### SCOPE

#### Inclusions:

**Shoe Management Features:** The project will entail the development of a comprehensive set of shoe management features, including product catalog creation, categorization, filtering and stock tracking.

**Intuitive User Interface:** The ecommerce shoe website will boast an intuitive user interface crafted to elevate user experience and encourage interaction. The interface will be aesthetically pleasing and user-friendly.

**Cross-Platform Accessibility:** The platform will be accessible across multiple devices and platforms, ensuring seamless browsing and shopping experiences on desktops, laptops, tablets, and smartphones. Compatibility with leading web browsers will be assured. Assumptions and **Constraints:**

**Schedule:** The project assumes adherence to the established timeline for development and testing phases. Unforeseen circumstances may lead to delays, impacting project milestones. **Budget:** The project operates within the allocated budget for software development, quality assurance, and deployment. Any additional features may necessitate budgetary adjustments. **Resources**: Adequate human resources are assumed for development, including software engineers, UX/UI designers, and QA testers. Availability of skilled resources is critical for project execution.

**Software:** The project assumes utilization of specific software development tools and frameworks tailored for ecommerce website development. Changes in the software stack may necessitate modifications to the project plan.

**Skills/Techniques:** The project assumes the availability of requisite skills and techniques for ecommerce development, user interface design, and data security implementation. Skill deficiencies may impact project deliverables.

**Product Interfaces:** The ecommerce shoe website is designed as an independent product. Integration with external systems or services is outside the project scope unless explicitly specified.

# CHAPTER 2: LITERATURE REVIEW

## **2**.1 Introduction

Introduction: The advent of ecommerce has heralded a transformative shift in the retail landscape, redefining the traditional brick-and-mortar shopping experience and opening up a world of possibilities for consumers. No longer bound by geographical constraints or limited store hours, individuals now have the unparalleled freedom to browse and purchase a vast array of products from the comfort of their own homes. Amidst this digital revolution, ecommerce websites specializing in the sale of diverse shoe varieties have emerged as prominent fixtures in the online marketplace. These platforms not only offer an extensive selection of footwear options but also provide a seamless and convenient shopping experience tailored to the modern consumer's preferences.

This literature review endeavors to delve into the multifaceted realm of ecommerce platforms dedicated to shoe sales, aiming to dissect and analyze the existing body of research and literature surrounding this dynamic sector. By delving into various facets such as consumer behavior, user experience, technological innovations, and marketing strategies, this review seeks to shed light on the intricate interplay of factors shaping the success and evolution of online shoe retailing. Through a comprehensive exploration of these key dimensions, we aim to provide valuable insights that can inform and guide the development and optimization of ecommerce websites specializing in shoe sales, ultimately contributing to a deeper understanding of this rapidly evolving industry.

As ecommerce steadily solidifies its foothold, especially within the realm of shoe sales, it becomes increasingly imperative to delve deeper into the intricate factors propelling this rapidly expanding sector forward. Hence, the primary objective of this literature review is to embark on a thorough exploration, dissecting and analyzing the existing corpus of research and literature relevant to ecommerce platforms that specialize in the sale of shoes (Li, 2024). Through meticulous examination of facets such as consumer behavior, user experience, technological advancements, and marketing strategies, this review endeavors to furnish a comprehensive understanding of the nuanced dynamics that animate this niche market (Maria, 2023).

By scrutinizing the ever-evolving landscape of consumer preferences, we aim to uncover the underlying motivations driving purchasing decisions in the realm of online shoe shopping. Moreover, by dissecting user experience elements, we seek to uncover the pivotal factors that contribute to customer satisfaction and loyalty in the digital marketplace (Ordenes, F. V., Solis, D. D., & Herhausen, 2022). Additionally, we aim to delve into the realm of technological innovations, exploring how emerging technologies such as augmented reality, virtual reality, and artificial intelligence are reshaping the online shoe retail experience.

Furthermore, by examining marketing strategies employed by ecommerce platforms specializing in shoe sales, we endeavor to unravel the tactics and techniques utilized to attract and retain customers in an increasingly competitive environment. Through this comprehensive analysis, we aim to shed light on the intricate interplay of factors that underpin the success and growth of ecommerce platforms within the shoe retailing sector (Hong, Sawang, & Yang, 2024). Ultimately, our goal is to provide valuable insights that can inform strategic decision-making and drive innovation within this burgeoning industry landscape.

**Consumer Behavior:**

Consumer behavior stands as the cornerstone of any thriving ecommerce venture, serving as the compass guiding strategic decisions and initiatives. It is imperative for ecommerce websites to delve deep into the psyche of their audience, comprehending the myriad motivations, preferences, and decision-making processes that steer purchasing behaviors. By gaining insights into these intricate dynamics, platforms can effectively target and engage their audience, fostering lasting relationships and driving conversions (Ramachandran, 2023).

In the realm of online shoe shopping, consumer behavior manifests in a multitude of ways, influenced by a myriad of factors. Extensive research has uncovered a rich tapestry of influences shaping consumer decisions, ranging from the breadth of product assortment and the perceived reputation of brands to the efficacy of pricing strategies and the resonance of user reviews (Rosid et.al. 2023). Understanding the interplay of these elements is pivotal for ecommerce platforms seeking to carve out a niche in the competitive landscape of online shoe retailing.

By peeling back the layers of consumer behavior, ecommerce platforms can tailor their offerings and marketing efforts to align with the desires and expectations of their target demographic. This nuanced understanding enables platforms to curate product assortments that resonate with the preferences of their audience, optimize pricing strategies to strike a balance between value and affordability, and leverage user-generated content to build trust and credibility (Singla, Shalender, & Singh, 2024). Ultimately, by aligning their strategies with the intricate nuances of consumer behavior, ecommerce platforms can position themselves for success in the dynamic and ever-evolving landscape of online shoe retailing.

**Technological Advancements:**

In the fast-paced realm of ecommerce, technological advancements serve as the catalyst for innovation, constantly propelling the industry forward and unlocking new avenues for growth and differentiation. The integration of cutting-edge technologies has become paramount for ecommerce platforms aiming to deliver enhanced functionality, immersive experiences, and unparalleled value to their customers (Smith, & Thomas, 2024).

One of the most transformative advancements in recent years is the advent of augmented reality (AR) and virtual reality (VR) technologies (Sharma, Mehtab, Mohan, & Mohd Shah, 2022). These immersive technologies have revolutionized the way consumers interact with products, offering lifelike experiences that bridge the gap between the digital and physical worlds. In the context of shoe sales, AR and VR enable customers to virtually try on shoes, visualize how they look and fit, and make more informed purchase decisions, thereby reducing the likelihood of returns and increasing overall satisfaction.

Furthermore, artificial intelligence (AI) algorithms play a pivotal role in enhancing the personalization and efficiency of ecommerce platforms (Bawack, et.al. 2022). AI-powered recommendation engines analyze vast amounts of data to deliver tailored product suggestions based on individual preferences, browsing history, and purchase behavior. This level of personalization not only enhances the shopping experience but also increases conversion rates and customer loyalty. Additionally, AI-driven chatbots provide instant, round-the-clock customer support, addressing queries, resolving issues, and providing assistance in a timely and efficient manner (Ramaul, 2021).

By harnessing these technological advancements, ecommerce websites specializing in shoe sales can differentiate themselves in a crowded market and stay ahead of the curve. By offering immersive product experiences, personalized recommendations, and seamless customer support, these platforms can elevate the overall shopping experience, foster deeper engagement with customers, and ultimately drive business growth (LI, 2023). In an era defined by rapid technological innovation, embracing these advancements is essential for ecommerce platforms to remain competitive and relevant in the ever-evolving landscape of online retail.

**Marketing Strategies:**

In the fiercely competitive arena of online retail, effective marketing strategies serve as the lifeblood of ecommerce websites, acting as the driving force behind traffic generation, lead acquisition, and ultimately, sales conversion. Particularly for ecommerce platforms specializing in shoe sales, the need for a multifaceted approach to marketing cannot be overstated (Angeloni, & Rossi, 2021).

In today's digital age, the landscape of marketing has evolved to encompass a diverse array of channels and tactics, each offering unique opportunities for reaching and engaging with potential customers. Social media platforms, for instance, have emerged as powerful tools for brand promotion and customer engagement (Lim, & Rasul, 2022). By leveraging platforms such as Instagram, Facebook, and Pinterest, shoe-focused ecommerce platforms can showcase their products, interact with followers, and cultivate a vibrant community of brand advocates.

In addition to social media, influencer partnerships represent another potent avenue for expanding reach and driving sales. Collaborating with influencers and industry experts allows ecommerce platforms to tap into established audiences and leverage their credibility and influence to endorse products authentically (Bakri, 2023).

Furthermore, targeted advertising campaigns enable platforms to reach specific segments of their target audience with tailored messages and offers, maximizing the effectiveness of marketing efforts. Whether through pay-per-click (PPC) advertising on search engines or display ads on relevant websites, targeted advertising allows ecommerce websites to connect with potential customers at various stages of the buyer's journey.

Content marketing initiatives also play a crucial role in building brand awareness and driving engagement (Lou, C., & Xie, 2021). By creating high-quality, informative content such as blog posts, videos, and infographics, ecommerce platforms can establish themselves as authorities in the shoe industry, attract organic traffic, and nurture relationships with their audience over time.

Ultimately, by crafting compelling and resonant marketing messages that resonate with their target audience's desires and aspirations, ecommerce websites can cultivate strong brand identities, foster lasting relationships, and differentiate themselves in the crowded marketplace. In an era defined by constant connectivity and information overload, the ability to cut through the noise and capture the attention of consumers is paramount for success in online retail.

**Conclusion:**

In conclusion, this literature review illuminates the multifaceted landscape of ecommerce platforms dedicated to shoe sales, providing a comprehensive analysis of the factors shaping this dynamic sector. Through a meticulous examination of consumer behavior, user experience, technological advancements, and marketing strategies, valuable insights have been gleaned into the complexities of this evolving industry.

As ecommerce continues to evolve and expand, it becomes increasingly evident that agility, innovation, and a customer-centric approach are essential for the sustained success of shoe-focused ecommerce websites. In an environment characterized by fierce competition and rapid technological advancement, platforms must remain nimble and adaptable, constantly seeking ways to enhance the shopping experience and meet the evolving needs of their customers.

By leveraging the insights garnered from this literature review, ecommerce platforms can chart a course towards sustainable growth and differentiation. Whether through the adoption of emerging technologies to enhance product visualization and personalization, the implementation of innovative marketing strategies to drive engagement and conversion, or the prioritization of user-centric design principles to optimize the online shopping experience, there are myriad opportunities for platforms to distinguish themselves in the marketplace.

Ultimately, by remaining attuned to the ever-changing dynamics of the ecommerce landscape and embracing a culture of continuous improvement and innovation, shoe-focused ecommerce websites can position themselves for long-term success and carve out a distinct identity in the competitive online retail space. As consumers' expectations continue to evolve and new trends emerge, the ability to anticipate and adapt to these shifts will be crucial for staying ahead of the curve and thriving in the digital marketplace.

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# CHAPTER THREE: METHODOLOGY

## 3.1 Introduction

The creation of our shoe e-commerce platform has been guided by a meticulous and well-structured methodology aimed at achieving our project goals. This chapter outlines the systematic approach we've taken, covering essential stages such as planning, design, development, testing, and deployment. Our methodology is rooted in the best practices of e-commerce development, ensuring a comprehensive and efficient execution across the entire project journey. The main purpose of this chapter is to offer a detailed glimpse into the strategic decisions, frameworks, and procedures that have steered our development process. By elucidating each phase of our methodology, readers will gain a nuanced understanding of the strategies and techniques behind the creation of our shoe e-commerce platform. Subsequent sections will dive into the intricacies of planning, design, development, testing, and deployment, revealing the steps we've taken to turn conceptual ideas into a fully functional and customer-centric shoe shopping experience.

3.2 Planning Phase

The Planning Phase of our shoe e-commerce website project was the foundational stage where we defined the project's parameters and made strategic decisions to align our development efforts with our overarching goals.

3.2.1 Project Scope Definition

Defining the project scope was the first step in the planning phase, establishing the boundaries for our shoe e-commerce platform. Our aim was to articulate and crystallize the specific features and functionalities that would be integrated into the platform. This process involved collaboration between developers and potential customers to delineate the project's objectives and scope clearly. The ultimate goal was to establish a solid understanding of the project's scope, providing a robust framework for subsequent design and development efforts.

3.2.2 Requirement Analysis

Conducting a comprehensive analysis of user requirements was a crucial aspect of the planning phase. Our objective was to gain insights into the needs and expectations of potential shoe buyers, ensuring that our e-commerce website would resonate with its intended audience. This involved engaging with potential customers through surveys, interviews, and feedback sessions to understand their preferences, pain points, and desired features. The information gathered during this phase served as the foundation for decision-making in subsequent design and development stages. Prioritizing features based on user expectations was a key aspect of this analysis, laying the groundwork for a customer-centric and effective shoe shopping experience. The Planning Phase, encompassing project scope definition and requirement analysis, provided our project team with a solid foundation. The outcomes of this phase set the trajectory for subsequent stages, ensuring that our shoe e-commerce website would be purposeful, user-oriented, and aligned with identified goals and user needs.

**User Interface Requirements**

The User Interface (UI) of our shoe e-commerce website was meticulously designed to ensure an intuitive and engaging shopping experience. The following requirements were identified during the Requirement Analysis:

**Responsive Design:**

The UI was required to be responsive, catering to users accessing the platform from various devices, including desktops, laptops, tablets, and smartphones.

Intuitive Shoe Browsing Interface: The shoe browsing interface was designed to be user-friendly, allowing customers to browse through shoes effortlessly and filter them based on size, style, and other preferences.

**Easy Checkout Process:** A streamlined checkout process was essential, enabling customers to complete their purchases quickly and securely.

**Product Reviews and Ratings:** Integration of product reviews and ratings was crucial to help customers make informed purchasing decisions.

**Customer Support Interface:** A customer support interface was implemented, allowing users to contact support staff easily for assistance with orders or inquiries.

Admin Interface Requirements The Admin Interface was designed to facilitate efficient management, monitoring, and maintenance of our shoe e-commerce website. Key requirements included:

Inventory Management: Admins were equipped with tools to manage shoe inventory, update product information, and track stock levels.

Order Management: An interface allowing administrators to view and manage customer orders, process refunds, and track shipments.

Customer Management: Admins could manage customer accounts, view order histories, and address customer inquiries or issues.

Software Requirements Our shoe e-commerce website leveraged a specific set of technologies to bring the envisioned features to life. The software requirements included:

Frontend Technologies:

HTML: Markup language for structuring the website.

CSS: Styling language for visually enhancing the UI.

JavaScript: Programming language for implementing dynamic interactions.

Bootstrap: A CSS Framework for responsive design.

Backend Technologies:

PHP: Server-side scripting language for dynamic web page generation.

MySQL: Relational database management system for storing and retrieving shoe-related data.

Server Environment:

Apache: Web server software for hosting the website.

Linux: Operating system for server deployment, providing stability and security.

Hardware Requirements The hardware requirements for our shoe e-commerce website were minimal, ensuring accessibility across a broad range of devices. Users needed devices with standard web-browsing capabilities, while administrators utilized devices with internet connectivity to access the admin interface.

**3.3 Design Phase**

**3.3.1 User-Centric Interface Design**

The Design Phase of our shoe e-commerce website was a meticulous endeavor to craft an interface that not only meets customer expectations but exceeds them in terms of intuitiveness and responsiveness. User-centric design principles were at the forefront of this phase, guiding the creation of an interface that resonates with our target audience. Wireframing

Wireframing: Initial wireframes were sketched to outline the skeletal structure of the interface, focusing on layout and user flow.

**Iterative Design**

Iterative Design Process: The design underwent iterative cycles based on user feedback, ensuring that adjustments were made to enhance usability and address customer preferences.

**3.3.2 Product Display and Navigation**

Seamless product display and navigation were pivotal components of the design phase, enriching the user interface with a dynamic presentation of shoes and intuitive browsing options.

Dynamic Product Showcase: The product display feature allowed customers to view shoes from different angles and zoom in to see details, enhancing their shopping experience.

User-Friendly Navigation: Navigation menus and filters were designed to be user-friendly, enabling customers to easily browse through categories, apply filters, and find the shoes they're looking for.

### 3.3.3 System Architecture and Process Flow

#### Login Flowchart

NO

YES

NO

YES

Username and Password valid?

Enter Username

And Password

Submit

Sign Up

Enter to the website

Logged in to the System

Log In

Fill in the Information

Have an Account

## 3.4 Development Phase

**3.4.1 Shoe E-commerce Platform Architecture**

The Development Phase of our shoe e-commerce website centered on building a resilient and scalable architecture to accommodate the desired functionalities.

• **Technology Stack Selection:** We meticulously chose technologies, frameworks, and databases to align with the project's needs. This encompassed PHP for server-side scripting, MySQL for database management, and suitable frontend technologies.

### **3.4.2 Database Connection Setup**

<?php

$con=mysqli\_connect('localhost','root','','mystore');

if($con){

    echo "";

}

else{

    die(mysqli\_error($con));

}

?>

### 3.4.3 Home page set up

<!-- connect file -->

<?php

include('includes/connect.php');

include('functions/common\_functions.php');

session\_start();

?>

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>e-commerce website</title>

    <!-- bootstrap css link -->

    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-QWTKZyjpPEjISv5WaRU9OFeRpok6YctnYmDr5pNlyT2bRjXh0JMhjY6hW+ALEwIH" crossorigin="anonymous">

    <!-- font awesome -->

    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.15.4/css/all.min.css" integrity="sha512-1ycn6IcaQQ40/MKBW2W4Rhis/DbILU74C1vSrLJxCq57o941Ym01SwNsOMqvEBFlcgUa6xLiPY/NS5R+E6ztJQ==" crossorigin="anonymous" referrerpolicy="no-referrer" />

    <!-- css file -->

    <link rel="stylesheet" href="style.css">

</head>

<body>

  <!-- navbar -->

  <div class="container-fluid p-0">

    <!-- first child-->

    <nav class="navbar navbar-expand-lg bg-info">

  <div class="container-fluid">

    <img src="./images/logo.png" alt="" class="logo">

    <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">

      <span class="navbar-toggler-icon"></span>

    </button>

    <div class="collapse navbar-collapse" id="navbarSupportedContent">

      <ul class="navbar-nav me-auto mb-2 mb-lg-0">

        <li class="nav-item">

          <a class="nav-link active" aria-current="page" href="index.php">Home</a>

        </li>

        <li class="nav-item">

          <a class="nav-link" href="display\_all.php">products</a>

        </li>

        <?php

if(isset($\_SESSION['username'])){

  echo "<li class='nav-item'>

  <a class='nav-link' href='./users\_area/profile.php'>My Account</a>

</li>";

}else{

  echo "<li class='nav-item'>

  <a class='nav-link' href='./users\_area/user\_registration.php'>Register</a>

</li>";

}

?>

        <li class="nav-item">

          <a class="nav-link" href="#">contact</a>

        </li>

        <li class="nav-item">

          <a class="nav-link" href="cart.php"><i class="fa fa-shopping-cart" aria-hidden="true"></i><sup><?php cart\_item(); ?></sup></a>

        </li>

        <li class="nav-item">

          <a class="nav-link" href="#">total price: <?php total\_cart\_price(); ?>\-</a>

        </li>

        </ul>

      <form class="d-flex" role="search" action="search\_product.php" method="get">

        <input class="form-control me-2" type="search" placeholder="Search" aria-label="Search" name="search\_data\_product">

        <input type="submit" value="search" class="btn btn-outline-light" name="search\_data\_product">

      </form>

    </div>

  </div>

</nav>

<!-- calling cart function -->

<?php

cart();

?>

<!-- second child -->

 <nav class="navbar navbar-expand-lg navbar-dark bg-secondary">

   <ul class="navbar-nav me-auto">

        <?php

        if(!isset($\_SESSION['username'])){

          echo "<li class='nav-item'>

          <a class='nav-link' href='3'>Welcome Guest</a>

        </li>";

        }else{

          echo "<li class='nav-item'>

          <a class='nav-link' href='./users\_area/profile.php'>Welcome ".$\_SESSION['username']."</a>

        </li>";

        }

if(!isset($\_SESSION['username'])){

  echo "<li class='nav-item'>

  <a class='nav-link' href='./users\_area/user\_login.php'>login</a>

</li>";

}else{

  echo "<li class='nav-item'>

  <a class='nav-link' href='./users\_area/user\_logout.php'>logout</a>

</li>";

}

?>

   </ul>

 </nav>

 <!-- third child -->

    <div class="bg-light">

        <h3 class="text-center">Hidden store</h3>

        <p class="text-center">communications is at the heart of e-comerce and community</p>

    </div>

    <!-- fourth child -->

        <div class="row px-3">

            <div class="col-md-10 mb-2">

                <!-- products -->

                <div class="row">

<!-- fetching products -->

<?php

//calling function

 getproducts();

 get\_unique\_categories();

 get\_unique\_brands();

 //$ip = getIPAddress();

//echo 'User Real IP Address - '.$ip;

?>

                <!-- row end -->

                </div>

                <!-- col end -->

            </div>

            <div class="col-md-2 bg-secondary p-0">

                <ul class="navbar-nav me-auto text-center">

                   <li class="nav-item bg-info">

                    <a href="#" class="nav-link text-light"><h4>Delivery Brands</h4></a>

                   </li>

<?php

//calling function for displaying brands in sidenav

   getbrands();

?>

                </ul>

                <!-- categories -->

                <ul class="navbar-nav me-auto text-center">

                   <li class="nav-item bg-info">

                    <a href="#" class="nav-link text-light"><h4>categories</h4></a>

                   </li>

<?php

//calling function for displaying categories in sidenav

   getcategories();

  ?>

                </ul>

            </div>

        </div>

<!-- last child -->

    <!-- include footer -->

    <?php include("./includes/footer.php")?>

  </div>

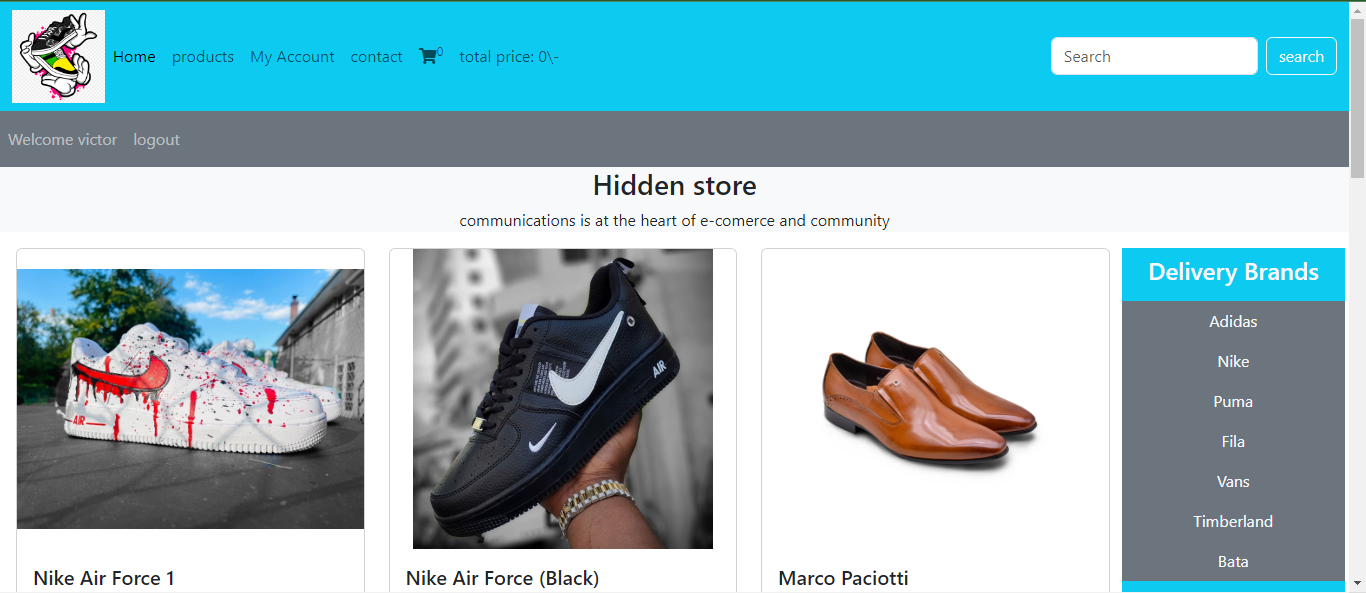
<!-- bootstrap js link -->

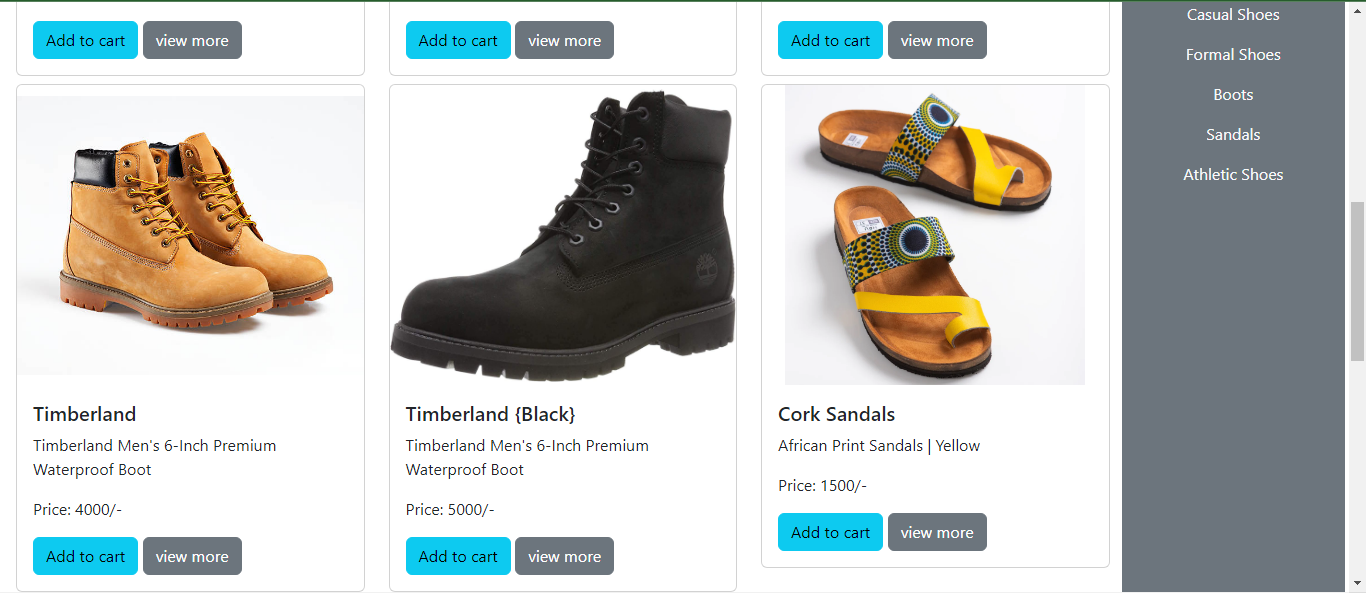
<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/js/bootstrap.bundle.min.js" integrity="sha384-YvpcrYf0tY3lHB60NNkmXc5s9fDVZLESaAA55NDzOxhy9GkcIdslK1eN7N6jIeHz" crossorigin="anonymous"></script>

</body>

</html>

**Home page interface**





### 3.4.4 Admin page set up

<!-- connect files -->

<?php

include('../includes/connect.php');

include('../functions/common\_functions.php');

session\_start();

?>

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>admin dashboard</title>

    <!-- bootstrap css link -->

    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-QWTKZyjpPEjISv5WaRU9OFeRpok6YctnYmDr5pNlyT2bRjXh0JMhjY6hW+ALEwIH" crossorigin="anonymous">

    <!-- font awesome -->

    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.15.4/css/all.min.css" integrity="sha512-1ycn6IcaQQ40/MKBW2W4Rhis/DbILU74C1vSrLJxCq57o941Ym01SwNsOMqvEBFlcgUa6xLiPY/NS5R+E6ztJQ==" crossorigin="anonymous" referrerpolicy="no-referrer"/>

    <!-- css file -->

    <link rel="stylesheet" href="../style.css">

    <style>

        .admin-image {

    width: 100px;

    object-fit: contain;

}

    </style>

</head>

<body>

  <!-- navbar -->

  <div class="container-fluid p-0">

    <!-- first child -->

    <nav class="navbar navbar-expand-lg nav-light bg-info">

        <div class="container-fluid">

            <img src="../images/logo.png" alt="" class="logo">

            <nav class="navbar navbar-expand-lg">

                <ul class="navbar-nav">

                <?php

        if(!isset($\_SESSION['admin\_username'])){

          echo "<li class='nav-item'>

          <a class='nav-link' href='3'>Welcome Guest</a>

        </li>";

        }else{

          echo "<li class='nav-item'>

          <a class='nav-link' href='index.php'>Welcome ".$\_SESSION['admin\_username']."</a>

        </li>";

        }

if(!isset($\_SESSION['admin\_username'])){

  echo "<li class='nav-item'>

  <a class='nav-link' href='admin\_login.php'>login</a>

</li>";

}else{

  echo "<li class='nav-item'>

  <a class='nav-link' href='admin\_logout.php'>logout</a>

</li>";

}

?>

                </ul>

            </nav>

        </div>

    </nav>

    <!-- second child -->

    <div class="bg-light">

        <h3 class="text-center p-2">Manager</h3>

    </div>

    <!-- third child -->

    <div class="row">

        <div class="col-md-12 bg-secondary p-1 d-flex align-items-center">

            <div class="p-3">

                <a href="#"><img src="../images/office.jpg" alt="" class="admin-image"></a>

                <p class="text-light text-center">Admin <?php."$\_SESSION['admin\_username']"?></p>

            </div>

            <!-- button\*10>a.nav-link.text-light.bg-info.my-1 -->

            <div class="button text-center">

                <button><a href="insert\_products.php" class="nav-link text-light bg-info my-1">Insert Products</a></button>

                <button><a href="index.php?view\_products" class="nav-link text-light bg-info my-1">View Products</a></button>

                <button><a href="index.php?insert\_category" class="nav-link text-light bg-info my-1">insert categories</a></button>

                <button><a href="index.php?view\_categories" class="nav-link text-light bg-info my-1">view Categories</a></button>

                <button><a href="index.php?insert\_brands" class="nav-link text-light bg-info my-1">Insert Brands</a></button>

                <button><a href="index.php?view\_brands" class="nav-link text-light bg-info my-1">View Brands</a></button>

                <!--<button><a href="" class="nav-link text-light bg-info my-1">All Orders</a></button>

                <button><a href="" class="nav-link text-light bg-info my-1">All Payments</a></button> -->

                <button><a href="index.php?list\_users" class="nav-link text-light bg-info my-1">List users</a></button>

                <button><a href="" class="nav-link text-light bg-info my-1">Logout</a></button>

            </div>

        </div>

    </div>

  </div>

    <!-- fourth child -->

    <div class="container my-3">

        <?php

        if(isset($\_GET['insert\_category'])){

            include('insert\_category.php');

        }

        if(isset($\_GET['insert\_brands'])){

            include('insert\_brands.php');

        }

        if(isset($\_GET['view\_products'])){

            include('view\_products.php');

        }

        if(isset($\_GET['edit\_products'])){

            include('edit\_products.php');

        }

        if(isset($\_GET['delete\_product'])){

            include('delete\_product.php');

        }

        if(isset($\_GET['view\_categories'])){

            include('view\_categories.php');

        }

        if(isset($\_GET['edit\_category'])){

            include('edit\_categories.php');

        }

        if(isset($\_GET['delete\_category'])){

            include('delete\_categories.php');

        }

        if(isset($\_GET['view\_brands'])){

            include('view\_brands.php');

        }

        if(isset($\_GET['edit\_brands'])){

            include('edit\_brand.php');

        }

        if(isset($\_GET['delete\_brand'])){

            include('delete\_brands.php');

        }

        if(isset($\_GET['list\_users'])){

            include('list\_users.php');

        }

        if(isset($\_GET['delete\_user'])){

            include('delete\_users.php');

        }

        ?>

    </div>

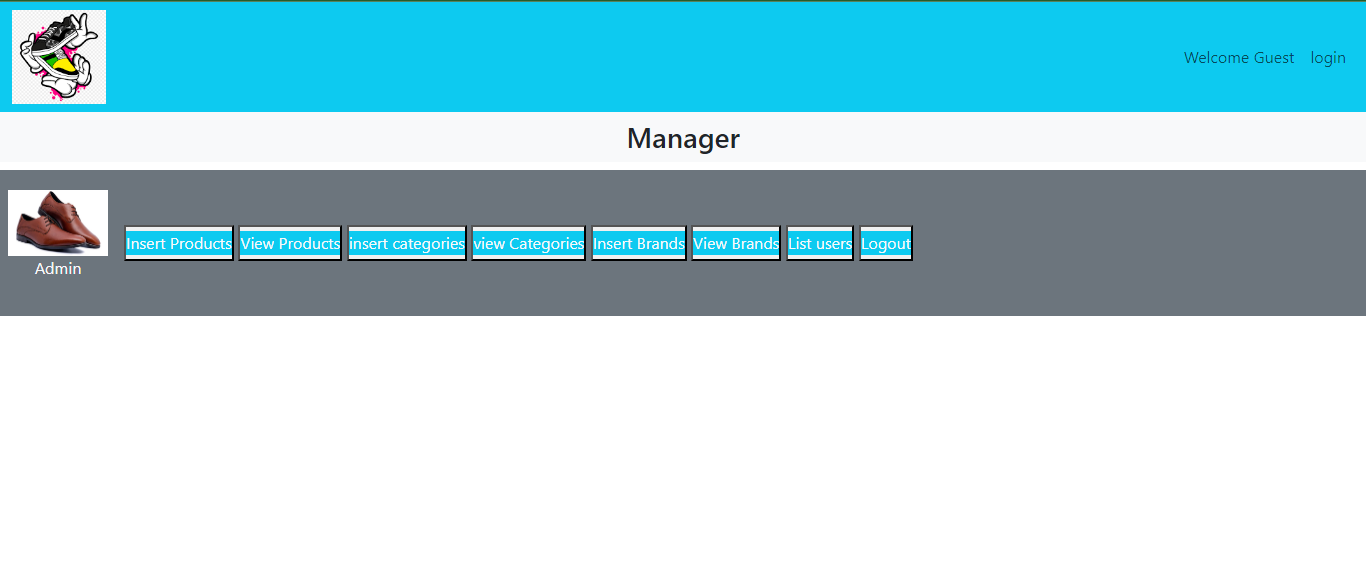
<!-- bootstrap js link -->

<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/js/bootstrap.bundle.min.js" integrity="sha384-YvpcrYf0tY3lHB60NNkmXc5s9fDVZLESaAA55NDzOxhy9GkcIdslK1eN7N6jIeHz" crossorigin="anonymous"></script>

</body>

</html>

Admin interface



### 3.4.5 Cart Function

<!-- connect file -->

<?php

include('includes/connect.php');

include('functions/common\_functions.php');

session\_start();

?>

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>e-commerce website - cart details</title>

    <!-- bootstrap css link -->

    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-QWTKZyjpPEjISv5WaRU9OFeRpok6YctnYmDr5pNlyT2bRjXh0JMhjY6hW+ALEwIH" crossorigin="anonymous">

    <!-- font awesome -->

    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.15.4/css/all.min.css" integrity="sha512-1ycn6IcaQQ40/MKBW2W4Rhis/DbILU74C1vSrLJxCq57o941Ym01SwNsOMqvEBFlcgUa6xLiPY/NS5R+E6ztJQ==" crossorigin="anonymous" referrerpolicy="no-referrer" />

    <!-- css file -->

    <link rel="stylesheet" href="style.css">

    <style>

      .cart\_img{

    width: 80px;

    height: 80px;

    object-fit: contain;

}

    </style>

</head>

<body>

  <!-- navbar -->

  <div class="container-fluid p-0">

    <!-- first child-->

    <nav class="navbar navbar-expand-lg bg-info">

  <div class="container-fluid">

    <img src="./images/logo.png" alt="" class="logo">

    <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">

      <span class="navbar-toggler-icon"></span>

    </button>

    <div class="collapse navbar-collapse" id="navbarSupportedContent">

      <ul class="navbar-nav me-auto mb-2 mb-lg-0">

        <li class="nav-item">

          <a class="nav-link active" aria-current="page" href="index.php">Home</a>

        </li>

        <li class="nav-item">

          <a class="nav-link" href="display\_all.php">products</a>

        </li>

        <li class="nav-item">

          <a class="nav-link" href="./users\_area/user\_registration.php">register</a>

        </li>

        <li class="nav-item">

          <a class="nav-link" href="#">contact</a>

        </li>

        <li class="nav-item">

          <a class="nav-link" href="cart.php"><i class="fa fa-shopping-cart" aria-hidden="true"></i><sup><?php cart\_item(); ?></sup></a>

        </li>

        </ul>

    </div>

  </div>

</nav>

<!-- calling cart function -->

<?php

cart();

?>

<!-- second child -->

 <nav class="navbar navbar-expand-lg navbar-dark bg-secondary">

   <ul class="navbar-nav me-auto">

   <?php

        if(!isset($\_SESSION['username'])){

          echo "<li class='nav-item'>

          <a class='nav-link' href='#'>Welcome Guest</a>

        </li>";

        }else{

          echo "<li class='nav-item'>

          <a class='nav-link' href='#'>Welcome ".$\_SESSION['username']."</a>

        </li>";

        }

if(!isset($\_SESSION['username'])){

  echo "<li class='nav-item'>

  <a class='nav-link' href='./users\_area/user\_login.php'>login</a>

</li>";

}else{

  echo "<li class='nav-item'>

  <a class='nav-link' href='./users\_area/user\_logout.php'>logout</a>

</li>";

}

        ?>

   </ul>

 </nav>

 <!-- third child -->

    <div class="bg-light">

        <h3 class="text-center">Hidden store</h3>

        <p class="text-center">communications is at the heart of e-comerce and community</p>

    </div>

<!-- fourth child-table -->

<div class="container">

    <div class="row">

      <form action="" method="post">

        <table class="table table-bordered text-center">

            <tbody>

              <!-- php code to display dynamic data -->

<?php

global $con;

    $ip = getIPAddress();

    $total=0;

    $cart\_query="select \* from cart\_details where ip\_address='$ip'";

    $result=mysqli\_query($con,$cart\_query);

    $result\_count=mysqli\_num\_rows($result);

    if($result\_count>0){

      echo "<thead>

      <tr>

          <th>Product Title</th>

          <th>Product Image</th>

          <th>Quantity</th>

          <th>Total Price</th>

          <th>Remove</th>

          <th colspan='2'>Operations</th>

      </tr>

  </thead>";

    while($row=mysqli\_fetch\_array($result)){

        $product\_id=$row['product\_id'];

        $select\_products="select \* from products where product\_id='$product\_id'";

        $result\_products=mysqli\_query($con,$select\_products);

        while($row\_product\_price=mysqli\_fetch\_array($result\_products)){

           $product\_price=array($row\_product\_price['product\_price']);

           $price\_table=$row\_product\_price['product\_price'];

           $product\_title=$row\_product\_price['product\_title'];

           $product\_image1=$row\_product\_price['product\_image1'];

           $product\_values=array\_sum($product\_price);

           $total+=$product\_values;

?>

                <tr>

                    <td><?php echo $product\_title?></td>

                    <td><img src="./images/<?php echo $product\_image1?>" alt="" class="cart\_img"></td>

                    <td><input type="text" name="qty" id="" class="form-input w-50"></td>

                    <td><?php echo $price\_table?>/-</td>

                    <td><input type="checkbox" name="removeItem[]" value="<?php echo $product\_id ?>"></td>

                    <td>

                    <?php

                    global $con;

                      $ip = getIPAddress();

                      if(isset($\_POST['update\_cart'])){

                        $quantities=$\_POST['qty'];

                        $update\_cart="update cart\_details set quantity=$quantities where ip\_address='$ip'";

                        $result\_products\_quantity=mysqli\_query($con,$update\_cart);

                        $total=$total\*$quantities;

                      }

                    ?>

                      <!-- <button class="bg-info px-3 py-2 border-0 mx-3">Update</button> -->

                      <input type="submit" value="update cart" class="bg-info px-3 py-2 border-0 mx-3" name="update\_cart">

                      <!-- <button class="bg-info px-3 py-2 border-0 mx-3">Remove</button> -->

                      <input type="submit" value="Remove" class="bg-info px-3 py-2 border-0 mx-3" name="remove\_cart">

                    </td>

                </tr>

                <?php

                }

              }

            }

            else{

              echo "<h2 class='text-center text-danger'>Cart is empty</h2>";

            }

            ?>

            </tbody>

        </table>

        <!-- subtotal -->

        <div class="d-flex mb-5">

        <?php

        $ip = getIPAddress();

        $cart\_query="select \* from cart\_details where ip\_address='$ip'";

        $result=mysqli\_query($con,$cart\_query);

        $result\_count=mysqli\_num\_rows($result);

        if($result\_count>0){

          echo "<h4 class='px-3'>Subtotal: <strong class='text-info'> $total/-</strong></h4>

          <input type='submit' value='Continue Shopping' class='bg-info px-3 py-2 border-0 mx-3' name='continue\_shopping'>

          <button class='bg-info px-3 py-2 border-0 text-light'><a href='./users\_area/checkout.php' class='text-light text-decoration-none'>Checkout</a></button>";

        }else{

          echo "<input type='submit' value='Continue Shopping' class='bg-info px-3 py-2 border-0 mx-3' name='continue\_shopping'>";

        }

        if(isset($\_POST['continue\_shopping'])){

          echo "<script>window.open('index.php','\_self')</script>";

        }

        ?>

        </div>

    </div>

</div>

</form>

<!-- function to remove items -->

<?php

function remove\_cart\_item(){

  global $con;

  // Check if the form is submitted and 'removeItem' index is set in $\_POST

  if(isset($\_POST['remove\_cart']) && isset($\_POST['removeItem'])){

    // Loop through each selected item to remove from the cart

    foreach($\_POST['removeItem'] as $remove\_id){

      // Sanitize the input to prevent SQL injection

      $remove\_id = mysqli\_real\_escape\_string($con, $remove\_id);

      // Construct and execute the delete query

      $delete\_query = "DELETE FROM cart\_details WHERE product\_id='$remove\_id'";

      $run\_delete = mysqli\_query($con, $delete\_query);

      if($run\_delete){

        // Redirect to cart.php after successful deletion

        echo "<script>window.open('cart.php','\_self')</script>";

      }

    }

  }

}

// Call the function to remove items from the cart

echo $remove\_item=remove\_cart\_item();

?>

<!-- last child -->

    <!-- include footer -->

    <?php include("./includes/footer.php")?>

  </div>

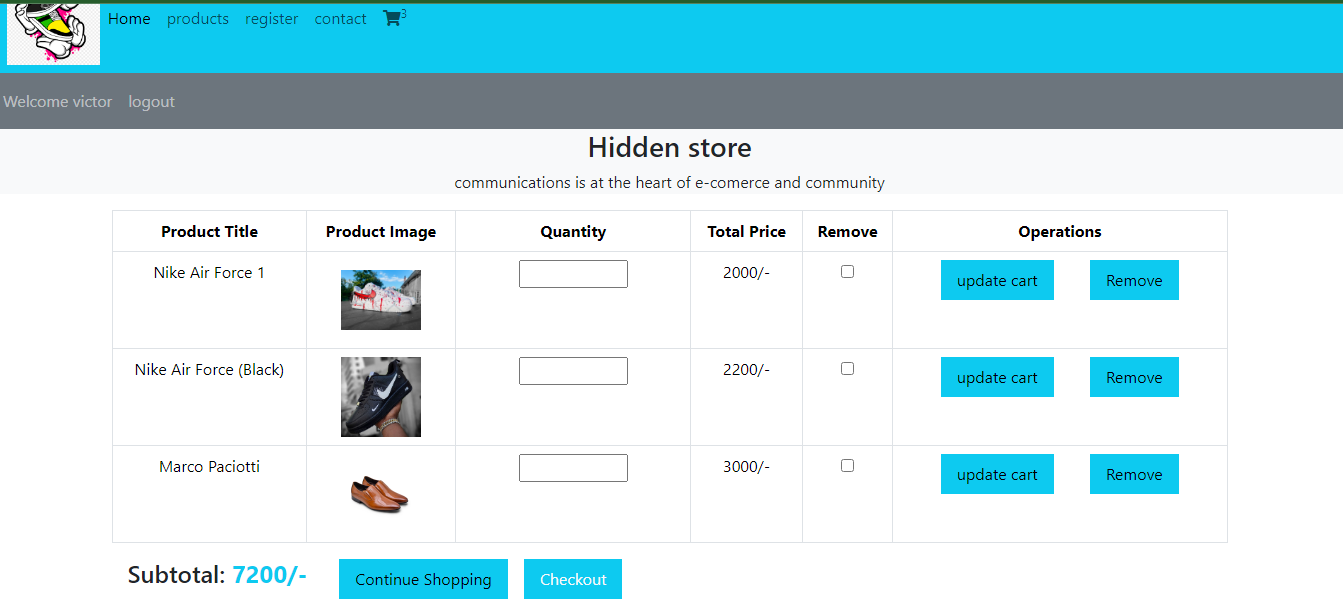
<!-- bootstrap js link -->

<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/js/bootstrap.bundle.min.js" integrity="sha384-YvpcrYf0tY3lHB60NNkmXc5s9fDVZLESaAA55NDzOxhy9GkcIdslK1eN7N6jIeHz" crossorigin="anonymous"></script>

</body>

</html>

### Cart interface



### 3.4.6 User Profile Setup

<!-- connect file -->

<?php

include('../includes/connect.php');

include('../functions/common\_functions.php');

session\_start();

?>

<!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="UTF-8">

    <meta name="viewport" content="width=device-width, initial-scale=1.0">

    <title>Welcome <?php echo $\_SESSION['username'] ?></title>

    <!-- bootstrap css link -->

    <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-QWTKZyjpPEjISv5WaRU9OFeRpok6YctnYmDr5pNlyT2bRjXh0JMhjY6hW+ALEwIH" crossorigin="anonymous">

    <!-- font awesome -->

    <link rel="stylesheet" href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/5.15.4/css/all.min.css" integrity="sha512-1ycn6IcaQQ40/MKBW2W4Rhis/DbILU74C1vSrLJxCq57o941Ym01SwNsOMqvEBFlcgUa6xLiPY/NS5R+E6ztJQ==" crossorigin="anonymous" referrerpolicy="no-referrer"/>

    <!-- css file -->

    <link rel="stylesheet" href="../style.css">

</head>

<body>

  <!-- navbar -->

  <div class="container-fluid p-0">

    <!-- first child-->

    <nav class="navbar navbar-expand-lg bg-info">

  <div class="container-fluid">

    <img src="../images/logo.png" alt="" class="logo">

    <button class="navbar-toggler" type="button" data-bs-toggle="collapse" data-bs-target="#navbarSupportedContent" aria-controls="navbarSupportedContent" aria-expanded="false" aria-label="Toggle navigation">

      <span class="navbar-toggler-icon"></span>

    </button>

    <div class="collapse navbar-collapse" id="navbarSupportedContent">

      <ul class="navbar-nav me-auto mb-2 mb-lg-0">

        <li class="nav-item">

          <a class="nav-link active" aria-current="page" href="../index.php">Home</a>

        </li>

        <li class="nav-item">

          <a class="nav-link" href="../display\_all.php">products</a>

        </li>

        <li class="nav-item">

          <a class="nav-link" href="profile.php">My Account</a>

        </li>

        <li class="nav-item">

          <a class="nav-link" href="#">contact</a>

        </li>

        <li class="nav-item">

          <a class="nav-link" href="../cart.php"><i class="fa fa-shopping-cart" aria-hidden="true"></i><sup><?php cart\_item(); ?></sup></a>

        </li>

        <li class="nav-item">

          <a class="nav-link" href="#">total price: <?php total\_cart\_price(); ?>\-</a>

        </li>

        </ul>

      <form class="d-flex" role="search" action="../search\_product.php" method="get">

        <input class="form-control me-2" type="search" placeholder="Search" aria-label="Search" name="search\_data\_product">

        <input type="submit" value="search" class="btn btn-outline-light" name="search\_data\_product">

      </form>

    </div>

  </div>

</nav>

<!-- calling cart function -->

<?php

cart();

?>

<!-- second child -->

 <nav class="navbar navbar-expand-lg navbar-dark bg-secondary">

   <ul class="navbar-nav me-auto">

        <?php

        if(!isset($\_SESSION['username'])){

          echo "<li class='nav-item'>

          <a class='nav-link' href='#'>Welcome Guest</a>

        </li>";

        }else{

          echo "<li class='nav-item'>

          <a class='nav-link' href='#'>Welcome ".$\_SESSION['username']."</a>

        </li>";

        }

if(!isset($\_SESSION['username'])){

  echo "<li class='nav-item'>

  <a class='nav-link' href='./users\_area/user\_login.php'>login</a>

</li>";

}else{

  echo "<li class='nav-item'>

  <a class='nav-link' href='user\_logout.php'>logout</a>

</li>";

}

?>

   </ul>

 </nav>

 <!-- third child -->

    <div class="bg-light">

        <h3 class="text-center">Hidden store</h3>

        <p class="text-center">communications is at the heart of e-comerce and community</p>

    </div>

<!-- fourth child -->

<div class="row">

    <div class="col-md-2 p-0">

        <ul class="navbar-nav bg-secondary text-center" style="height:100vh">

            <li class="nav-item bg-info">

                <a href="" class="nav-link text-light"><h4>Your Profile</h4></a>

            </li>

            <?php

$username=$\_SESSION['username'];

$user\_image="select \* from user\_table where username='$username'";

$user\_image=mysqli\_query($con,$user\_image);

$row\_image=mysqli\_fetch\_array($user\_image);

//$user\_image = $row\_image['user\_image'] ?? ''; // If user\_image is set, use its value, otherwise set it to an empty string

// Check if user\_image is set and not empty

if(isset($row\_image['user\_image']) && !empty($row\_image['user\_image'])) {

  // If user\_image is set and not empty, use its value

  $user\_image = $row\_image['user\_image'];

  echo "<li class='nav-item'>

<img src='./user\_images/$user\_image' class='profile\_img my-4' alt=''>

</li>";

} else {

  // If user\_image is not set or empty, use the first letter of the username

  $user\_image = substr($username, 0, 1); // Get the first character of the username

  $user\_image = strtoupper($user\_image); // Convert to uppercase (optional)

}

//echo "<li class='nav-item'>

//<img src='./user\_images/$user\_image' class='profile\_img my-4' alt=''>

//</li>";

            ?>

            <li class="nav-item">

                <a href="profile.php" class="nav-link text-light">Pending Orders</a>

            </li>

            <li class="nav-item">

                <a href="profile.php?edit\_account" class="nav-link text-light">Edit Account</a>

            </li>

            <li class="nav-item">

                <a href="profile.php?my\_orders" class="nav-link text-light">My Orders</a>

            </li>

            <li class="nav-item">

                <a href="profile.php?delete\_account" class="nav-link text-light">Delete Account</a>

            </li>

            <li class="nav-item">

                <a href="user\_logout.php" class="nav-link text-light">Logout</a>

            </li>

        </ul>

    </div>

    <div class="col-md-10">

        <?php

    get\_user\_order\_details();

    if(isset($\_GET['edit\_account'])){

      include('edit\_account.php');

    }

    if(isset($\_GET['my\_orders'])){

      include('user\_orders.php');

    }

    if(isset($\_GET['delete\_account'])){

      include('delete\_account.php');

    }

    ?>

    </div>

</div>

<!-- last child -->

    <!-- include footer -->

    <?php include("../includes/footer.php")?>

  </div>

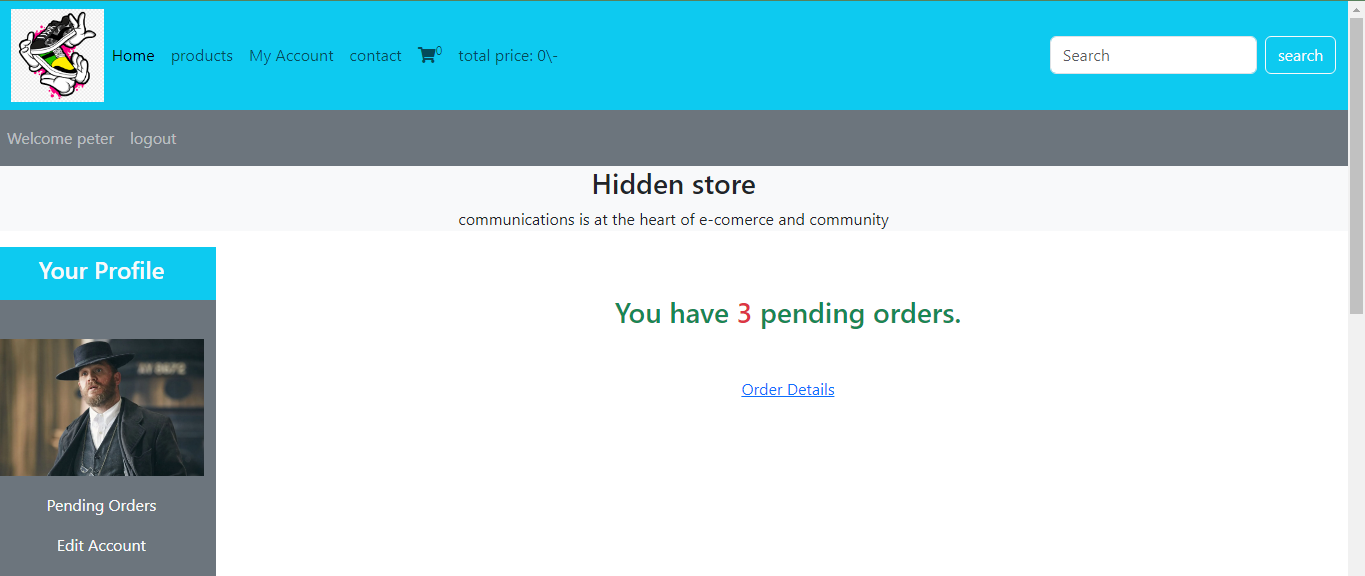
<!-- bootstrap js link -->

<script src="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/js/bootstrap.bundle.min.js" integrity="sha384-YvpcrYf0tY3lHB60NNkmXc5s9fDVZLESaAA55NDzOxhy9GkcIdslK1eN7N6jIeHz" crossorigin="anonymous"></script>

</body>

</html>

Profile interface



### 3.4.7 Database Setup

**Purpose:**

The primary objective of our Shoe E-commerce database is to facilitate seamless transactions and enhance user experience in shopping for shoes online. By centralizing product information and order management, the database aims to streamline the purchasing process, improve inventory management, and foster customer satisfaction. Additionally, the database serves as a repository for customer interactions, allowing for personalized communication and support. Scope: Within the scope of our Shoe E-commerce database, we encompass the management of products, customers, orders, and customer inquiries. Customers browse and purchase shoes, while administrators oversee the system's operation. The scope includes the relationships between customers and their orders, as well as the communication facilitated through customer inquiries. This design endeavors to create an integrated platform wherein customers can efficiently explore and purchase shoes, administrators can manage operations effectively, and communication is facilitated seamlessly. By elucidating the purpose and scope of our Shoe E-commerce database, this document aims to provide a comprehensive overview that guides the subsequent detailed exploration of its design components and implementation details. Entity-Relationship Diagram (ERD) for Shoe E-commerce Database: The Entity-Relationship Diagram (ERD) serves as a visual representation of the foundational structure of our Shoe E-commerce database. Entities:

**Products:** Represents the shoes available for sale in the e-commerce platform, each identified by a unique ProductID.

**Attributes:** ProductID (Primary Key), ProductName, Description, Price, CategoryID, StockQuantity.

**Customers:** Signifies individuals engaging with the e-commerce platform to purchase shoes, each identified by a unique CustomerID.

**Attributes:** CustomerID (Primary Key), FirstName, LastName, Email, Address, PhoneNumber.

**Orders:** Encompasses the orders placed by customers for purchasing shoes.

**Attributes:** OrderID (Primary Key), CustomerID (Foreign Key referencing Customers.CustomerID), OrderDate, TotalAmount, Status.

**Attributes:** InquiryID (Primary Key), CustomerID (Foreign Key referencing Customers.CustomerID), Subject, Message, InquiryDate. Relationships:

Customers - Orders (One-to-Many): Each customer can place multiple orders, but each order is associated with only one customer.

Customers - Inquiries (One-to-Many): Customers can submit multiple inquiries, but each inquiry is associated with only one customer. Cardinalities:

Customers (1) ----< Orders (Many)

Customers (1) ----< Inquiries (Many) Database Schema: The Shoe E-commerce database comprises the following tables:

**products:**

ProductID (INT, Primary Key)

ProductName (VARCHAR(255))

Description (TEXT)

Price (DECIMAL(10,2))

CategoryID (INT)

StockQuantity (INT)

**customers:**

CustomerID (INT, Primary Key)

FirstName (VARCHAR(50))

LastName (VARCHAR(50))

Email (VARCHAR(255))

Address (TEXT)

PhoneNumber (VARCHAR(20))

**orders:**

OrderID (INT, Primary Key)

CustomerID (INT, Foreign Key referencing customers.CustomerID)

OrderDate (DATETIME)

TotalAmount (DECIMAL(10,2))

Status (VARCHAR(20))

**inquiries:**

InquiryID (INT, Primary Key)

CustomerID (INT, Foreign Key referencing customers.CustomerID)

Subject (VARCHAR(255))

Message (TEXT)

InquiryDate (DATETIME) Normalization: The database tables adhere to the normalization process to eliminate redundancy and ensure data integrity. Each table is at least in the Third Normal Form (3NF), mitigating update anomalies and promoting efficient data storage.

products: 3NF

customers: 3NF

orders: 3NF

inquiries: 3NF Data Dictionary:

**products:**

CREATE TABLE `products` (

  `product\_id` int(11) NOT NULL,

  `product\_title` varchar(255) NOT NULL,

  `product\_description` varchar(255) NOT NULL,

  `Product\_keyword` varchar(255) NOT NULL,

  `category\_id` int(11) NOT NULL,

  `brand\_id` int(11) NOT NULL,

  `product\_image1` varchar(255) NOT NULL,

  `product\_image2` varchar(255) NOT NULL,

  `product\_image3` varchar(255) NOT NULL,

  `product\_price` varchar(100) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4\_general\_ci;

**Users tables:**

CREATE TABLE `user\_table` (

  `user\_id` int(11) NOT NULL,

  `username` varchar(100) NOT NULL,

  `user\_email` varchar(100) NOT NULL,

  `user\_password` varchar(255) NOT NULL,

  `user\_image` varchar(255) NOT NULL,

  `user\_ip` varchar(255) NOT NULL,

  `user\_address` varchar(255) NOT NULL,

  `user\_mobile` varchar(20) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4\_general\_ci;

orders:

CREATE TABLE `user\_orders` (

  `order\_id` int(11) NOT NULL,

  `user\_id` int(11) NOT NULL,

  `amount\_due` int(255) NOT NULL,

  `invoice\_number` int(255) NOT NULL,

  `total\_products` int(255) NOT NULL,

  `order\_date` timestamp NOT NULL DEFAULT current\_timestamp() ON UPDATE current\_timestamp(),

  `order\_status` varchar(255) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4\_general\_ci;

**Orders pending:**

CREATE TABLE `orders\_pending` (

  `order\_id` int(11) NOT NULL,

  `userid` int(11) NOT NULL,

  `invoice\_number` int(255) NOT NULL,

  `product\_id` int(11) NOT NULL,

  `quantity` int(255) NOT NULL,

  `order\_status` varchar(255) NOT NULL

) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4\_general\_ci;

inquiries:

InquiryID: Inquiry ID (Primary Key)

CustomerID: Foreign Key referencing customers.CustomerID

Subject: Subject of the inquiry

Message: Content of the inquiry

InquiryDate: Date of the inquiry Database Constraints:

products: Primary key on ProductID.

customers: Primary key on CustomerID.

orders: Primary key on OrderID. Foreign key constraint on CustomerID referencing customers.CustomerID.

inquiries: Primary key on InquiryID. Foreign key constraint on CustomerID referencing customers.CustomerID. Views and Stored Procedures: (No specific views or stored procedures defined for this database.) Indexing Strategy: Indexes are applied to optimize query performance on the following fields:

products: Index on CategoryID.

orders: Index on CustomerID. Security Model: User roles and permissions are established to control access to database resources. Passwords are securely hashed before storage. Access controls are implemented to restrict unauthorized actions. Backup and Recovery: Regular backups are performed, and a recovery strategy is in place. Backups are scheduled periodically, and the procedures for data restoration have been documented. Testing and Quality Assurance: Rigorous testing procedures, including unit testing and integration testing, have been conducted to ensure the reliability and accuracy of the database. Maintenance Plan: A comprehensive maintenance plan involves regular updates, proactive monitoring, and performance tuning to uphold the database's efficiency and stability. Dependencies: External dependencies and interfaces are identified and documented to ensure smooth interactions with other components or systems.

**Conclusion:** This database design document provides a comprehensive insight into the structure, constraints, security measures, and maintenance plans for the Shoe E-commerce database. It serves as a valuable reference for stakeholders involved in the development, implementation, and maintenance of the system.

## 3.5 Testing Phase

### 3.5.1 Quality Assurance

Quality assurance was paramount in ensuring our shoe e-commerce website's reliability and functionality met the highest standards.

**• Unit Testing:** Individual components underwent thorough testing to verify their correctness and functionality in isolation.

**• Integration Testing:** The interaction between different modules was rigorously tested to ensure seamless functionality.

• **User Acceptance Testing (UAT):** End-users actively participated in UAT to assess the usability and overall satisfaction with our shoe e-commerce website.

## 3.6 Deployment Phase

During the Deployment Phase of our shoe e-commerce website project, the focus was on making the system accessible to users. To achieve this, the website was hosted locally using the free service provided by Ngrok. Hosting with Ngrok Ngrok, a secure tunneling service, was utilized to expose the local web server to the internet. This allowed for remote access to our shoe e-commerce website without the need for a dedicated hosting server. The steps involved in this deployment process included:

**Installation of Ngrok:**

Ngrok was downloaded and installed on the local development environment. This involved obtaining the executable file and setting up the necessary configurations.

**Connecting to the Local Server:**

Our shoe e-commerce website, running on a local server (e.g., WampServer), was connected to Ngrok. Ngrok provided a public URL that acted as a tunnel to the locally hosted website.

**Exposing the Website to the Internet:**

Ngrok's command-line interface was used to expose the local website to the internet. This step generated a unique URL accessible globally.

**Accessing the Shoe E-commerce Website:**

Users could then access our shoe e-commerce website by navigating to the provided Ngrok URL. This allowed for testing and demonstration of the website's functionalities beyond the local environment.

## 3.7 Methodological Challenges

### 3.7.1 Overcoming Technical Challenges

The journey from project planning to deployment was not without its share of technical challenges. This section delves into the hurdles encountered during the development process and the strategic approaches taken to overcome them.

**Database Optimization**

• **Challenge:** Ensuring efficient data storage and retrieval in a dynamic shoe e-commerce system presented challenges in optimizing the database structure.

**• Strategy:** Database queries were fine-tuned, and indexes were implemented to enhance query performance.

**Cross-Browser Compatibility**

**• Challenge:** Ensuring consistent performance and appearance across various web browsers posed challenges due to differences in rendering engines.

• Strategy: Rigorous testing was conducted on multiple browsers, and adjustments were made to the CSS and JavaScript code to ensure compatibility. Progressive enhancement techniques were employed to provide a baseline experience across all browsers.

**Security Measures**

**• Challenge:** Implementing robust security measures to protect user data and prevent unauthorized access was a critical challenge.

**• Strategy:** Encryption techniques were applied to sensitive data, and authentication mechanisms were strengthened to ensure secure access to the shoe e-commerce website.

**Scalability**

**• Challenge**: Designing the architecture to handle potential scalability challenges as the user base grows over time.

**• Strategy:** The architecture was designed with scalability in mind, utilizing cloud services and implementing horizontal scaling strategies to accommodate increasing user traffic and data volume. Regular performance monitoring and optimization were also prioritized to ensure smooth scalability.

## 3.8 Summary

Chapter 3 has provided a comprehensive overview of the methodology employed in the development of our shoe e-commerce website. The systematic approach, encompassing project planning, design, development, testing, and deployment, ensured the creation of an online platform that not only offers a wide range of shoes but also prioritizes user experience. The next chapter will delve into the results and findings, providing a closer look at the functionality and usability of our shoe e-commerce website. Through user feedback, testing outcomes, and performance evaluations, a deeper understanding of the impact and effectiveness of the implemented features will be explored.

# CHAPTER 4: RESULTS AND FINDINGS

## 4.1 Introduction

This chapter conducts an in-depth exploration of the results and findings derived from the execution of our shoe e-commerce website. A meticulous examination encompassing rigorous testing, user feedback, and performance evaluations sheds light on the intricacies of the online platform's functionality and usability. The insights gathered herein offer valuable perspectives on the effectiveness of implemented features and the overarching influence of the shoe e-commerce website on user experience and shopping convenience. The methodologies employed in testing, coupled with the diverse array of user feedback and systematic performance evaluations, provide a comprehensive foundation for understanding how well the shoe e-commerce website aligns with its intended objectives. The ensuing sections unravel the intricacies of user interactions, system responses, and the overall impact of the implemented features, contributing to a nuanced comprehension of the project's outcomes.

## 4.2 User Feedback Analysis

**4.2 User Feedback Analysis**

The evaluation of our shoe e-commerce website extended beyond development to encompass extensive user testing, providing a rich source of feedback from individuals actively engaging with the system. This section delves into a thorough analysis of the user feedback, aiming to extract valuable insights pertaining to user satisfaction, preferences regarding features, and areas primed for potential enhancement.

**4.2.1 Usability Assessment**

Central to the user feedback analysis is an evaluation of the overall usability of our shoe e-commerce website. This involves a comprehensive assessment of user feedback, with a focus on key elements such as navigability, clarity of interfaces, and the intuitiveness embedded within the shopping experience. By scrutinizing the users' experiences, this assessment aims to highlight strengths and identify aspects that may benefit from refinement. The goal is to ensure that users can seamlessly navigate the system, comprehend its interfaces, and effortlessly browse and purchase shoes.

**4.2.2 Feature Satisfaction**

To gain a deeper understanding of user satisfaction, specific focus was directed toward querying users about their experiences with distinct features of the shoe e-commerce website. Users were prompted to express their satisfaction levels with critical elements, including product search, product details presentation, and checkout process. This granular analysis illuminates the efficacy of each feature in meeting user expectations and provides valuable insights for further refining and optimizing the functionality of our shoe e-commerce website.

## 4.3 Testing Outcomes

Our shoe e-commerce website underwent a comprehensive testing phase to validate its reliability and functionality. This section provides an overview of the outcomes derived from diverse testing procedures, encompassing unit testing, integration testing, and user acceptance testing. **4.3.1 Unit Testing Results**

Individual components constituting our shoe e-commerce website were systematically subjected to unit testing. This rigorous process aimed to ensure the correctness and functionality of each component in isolation. Within this section, a detailed presentation of the unit testing results is offered. Any issues identified during this phase are elucidated, accompanied by a thorough discussion of the corresponding resolutions. The insights gained from unit testing contribute to a robust understanding of the performance and stability of the individual elements comprising the online platform.

**4.3.2 Integration Testing Results**

The interaction between diverse modules and components within our shoe e-commerce website was rigorously examined through integration testing. This testing phase scrutinized the seamless functionality and compatibility of different elements, emphasizing the system's overall cohesion and interoperability. Within this section, the outcomes of integration testing are delineated, shedding light on the successful integration of various features and functionalities. The discussions encompass any challenges encountered and the strategies employed to maintain the harmonious interaction of components.

**4.3.3 User Acceptance Testing (UAT)**

End-users actively participated in the User Acceptance Testing (UAT) phase to assess the overall usability and satisfaction levels with our shoe e-commerce website. This section encapsulates findings derived from UAT, offering valuable insights into user acceptance, preferences, and noteworthy suggestions for potential enhancements. The user-centric nature of UAT provides a holistic perspective on how our shoe e-commerce website is perceived by its intended audience, guiding future refinements and optimizations. The collective outcomes from these testing procedures contribute to a comprehensive understanding of our shoe e-commerce website's performance, reliability, and user satisfaction.

## 4.4 Performance Evaluations

Our shoe e-commerce website's performance underwent meticulous evaluations under diverse conditions to ascertain its responsiveness and scalability. This section provides a detailed exposition of the results derived from performance evaluations, encompassing load testing and response time assessments.

### 4.4.1 Load Testing

To gauge the system's capacity to handle concurrent users and maintain optimal performance, rigorous load testing scenarios were employed. This section delves into the intricacies of load testing, presenting the scenarios, outcomes, and any optimizations implemented to bolster our shoe e-commerce website's scalability. The discussion here offers insights into the system's robustness under varying user loads and unveils strategies employed to enhance its performance capabilities.

### 4.4.2 Response Time Analysis

Critical user interactions were scrutinized through response time analysis to evaluate the system's responsiveness. This section dissects the findings from response time analysis, offering valuable insights into the user experience concerning speed and efficiency. The analysis sheds light on the system's ability to swiftly respond to user inputs, contributing to a nuanced understanding of its overall performance.

## 4.5 Summary of Findings

Chapter 4 culminates with a comprehensive summary encapsulating the results and findings gleaned from the intricate process of implementing and testing our shoe e-commerce website. The amalgamation of user feedback, testing outcomes, and performance evaluations paints a holistic picture of the platform's strengths, highlights areas for potential improvement, and provides a profound understanding of its impact on facilitating shoe sales effectively online. The ensuing chapters will further delve into the implications of these findings and explore avenues for future enhancements and refinements to ensure the continued efficacy of our shoe e-commerce website.

# CHAPTER 5: CONCLUSION AND FUTURE WORK

## 5.1 Recapitulation of Objectives

In Chapter 1, the foundational objectives of our shoe e-commerce website project were meticulously outlined, serving as guiding principles throughout its development. This section revisits each objective, providing a concise summary of how they were addressed in both the developmental and evaluative phases of the project.

**Objective 1:** **Develop an Intuitive User Interface**

The foremost objective aimed at crafting an intuitive user interface that fosters a seamless interaction between users and our shoe e-commerce website. Through the application of user-centric design principles, the interface was designed to be visually appealing, easy to navigate, and conducive to an enhanced user experience. User feedback, usability assessments, and iterative design ensured that the interface aligns with the expectations of our diverse user base. **Objective 2: Implement Comprehensive Shoe Management Features**

Central to the project's success was the implementation of a comprehensive set of shoe management features. From browsing and categorization to purchase and checkout, each feature was meticulously designed and integrated into our shoe e-commerce website. User testing and feedback analysis were instrumental in refining these features, ensuring they met the practical needs and preferences of our target audience.

**Objective 3: Due Dates Notifications**

Addressing the need for timely reminders, our shoe e-commerce website incorporated due date notifications. These notifications were designed to provide users with timely alerts regarding new arrivals, promotions, and limited-time offers, fostering proactive shopping management. The outcomes of user acceptance testing (UAT) and performance evaluations shed light on the effectiveness of these notifications in enhancing user engagement and meeting the project's objectives.

**Objective 4: Assumption Validation and Constraints**

Throughout the development and testing phases, assumptions and constraints outlined in Chapter 1 were systematically validated and addressed. The project adhered to established schedules, operated within allocated budgets, and navigated potential challenges related to resources, software, and skill sets. This recapitulation affirms the alignment of project activities with the initially set objectives, providing a comprehensive understanding of how each goal was not only pursued but successfully integrated into the fabric of our shoe e-commerce website.

## 5.2 Conclusions

The culmination of extensive development, testing, and evaluation in Chapter 4 leads to the following key conclusions regarding our shoe e-commerce website. These conclusions encapsulate the overarching impact on shoe sales management, user satisfaction, and system performance:

**Shoe Sales Management:**

Our shoe e-commerce website has demonstrated a profound impact on shoe sales management practices. Users experienced an intuitive and feature-rich environment that facilitated efficient browsing, selection, and purchase of shoes. The due date notifications proved effective in enhancing user engagement and overall management of shoe purchases.

**User Satisfaction:**

User feedback and usability assessments underscore a high level of user satisfaction. The intuitive interface, coupled with comprehensive shoe management features, contributed to a positive user experience. The iterative design approach, informed by user input, has resulted in a platform that resonates with user expectations and fosters repeat purchases. Overall System **Performance:**

Performance evaluations, including load testing and response time analysis, affirm our shoe e-commerce website's robustness and scalability. The system exhibits responsiveness under varying conditions, ensuring a seamless user experience even during peak shopping periods. This underscores the reliability and effectiveness of our platform in facilitating shoe sales online.

## 5.3 Contributions

Our shoe e-commerce website makes notable contributions to the field of online shoe sales: **Novel Features:**

Incorporation of real-time inventory updates, personalized shoe recommendations, and seamless checkout experiences are distinctive features that set our website apart. These additions contribute novel elements to the landscape of online shoe retail solutions. Innovative **Approaches:**

The integration of augmented reality for virtual shoe try-ons, coupled with AI-powered sizing recommendations and interactive shoe customization tools, represents innovative approaches to online shoe sales. These strategies enhance user engagement and overall shopping experience. **Improvements Over Existing Solutions:**

By addressing user-centric needs and preferences, our website serves as an improvement over existing online shoe retail solutions. The platform's intuitive interface, personalized recommendations, and robust inventory management contribute to a more satisfying and efficient shoe shopping experience for customers.

## 5.4 Limitations

Acknowledging the inherent challenges faced during the project is essential for a comprehensive understanding:

**Technical Challenges:**

Certain technical challenges, including the seamless integration of real-time inventory updates and ensuring compatibility across various shoe sizes and styles, presented complexities that required meticulous resolution.

**Scope Limitations:**

While our shoe e-commerce website encompasses a robust set of features, there may be additional functionalities that could be explored in future iterations. The scope was carefully defined within project constraints and budget limitations.

**External Factors:** External factors, such as market trends and competitor strategies, influenced certain project decisions. Adapting to these external dynamics required agile responses and ongoing monitoring to stay competitive in the online shoe retail landscape.

## 5.5 Implications

Delving into the broader implications of our shoe e-commerce website's implementation provides insights into its real-world applications:

**Real-World Scenarios:** Our shoe e-commerce website's adaptability positions it as a valuable tool in various real-world scenarios. From personal shoe shopping to corporate bulk purchases and special occasions, the platform offers versatility in addressing diverse needs.

**Impact on Individuals and Organizations:** Individuals and organizations seeking efficient and hassle-free shoe shopping experiences can benefit from our website. The platform's user-friendly interface, personalized recommendations, and seamless checkout process enhance customer satisfaction and streamline the shoe purchasing process for both individuals and organizations alike.

## 5.6 Recommendations

Drawing upon the findings and insights gained during the development and evaluation of our shoe e-commerce website, several recommendations emerge. These recommendations encompass both technical enhancements and potential improvements to user experience. Additionally, a notable suggestion involves the exploration of a dedicated application for enhanced user engagement: Technical Enhancements:

**Mobile Application Development:** Consider developing a dedicated mobile application in addition to the website. This application could be installed on users' smartphones, providing a more seamless and integrated shopping experience. A mobile application could leverage device-specific features, such as push notifications and GPS, offering enhanced performance and personalization.

**Integration with Wearable Devices:** Explore the integration of our shoe e-commerce website with wearable devices, such as smartwatches. This integration could enable users to receive notifications and updates directly on their wearable devices, enhancing convenience and accessibility.

**Augmented Reality (AR) Integration:** Enhance the shopping experience by integrating augmented reality (AR) technology. AR features could allow users to visualize how shoes would look on their feet before making a purchase, improving confidence and reducing returns.

**User Experience Improvements:**

**Enhanced Product Filtering:** Expand the filtering options for shoes to include more specific criteria, such as size, color, material, and brand. Providing users with advanced filtering capabilities ensures that they can quickly find the perfect pair of shoes that meet their preferences.

**Interactive Size Guide:** Implement an interactive size guide to assist users in finding the right shoe size. This feature could include visual aids and measurement tools to help users determine their correct shoe size accurately.

**Personalized Recommendations:** Utilize machine learning algorithms to provide personalized shoe recommendations based on users' browsing and purchase history. Personalized recommendations enhance the shopping experience by presenting users with relevant and appealing options.

**Dedicated Mobile Application:**

**In-Store Navigation:** Incorporate in-store navigation features into the mobile application to assist users in finding specific shoe locations within physical stores. This feature could utilize indoor mapping technology to provide step-by-step directions.

**Seamless Checkout Experience:** Optimize the checkout process in the mobile application to make it faster and more intuitive. Implement features such as one-click purchasing and saved payment methods to streamline the checkout experience for users. 5.7 Future Work Exploring avenues for future research and development opens opportunities for continual improvement and innovation within our shoe e-commerce platform. The following areas merit consideration for future endeavors:

**Social Commerce Integration:** Explore the integration of social commerce features to enable users to share their favorite shoes with friends and followers on social media platforms. Social commerce integration enhances brand visibility and encourages user engagement.

**Virtual Try-On Experience:** Investigate the implementation of a virtual try-on experience that allows users to virtually try on shoes using augmented reality technology. This feature provides a fun and interactive way for users to visualize how shoes would look on their feet.

**Sustainability Initiatives:** Develop sustainability initiatives within our shoe e-commerce platform, such as eco-friendly shoe options and recycling programs. Sustainability initiatives align with growing consumer preferences for environmentally conscious products and contribute to a positive brand image.

**5.8 Final Thoughts**

As our shoe e-commerce website project comes to a conclusion, it is essential to reflect on the journey and express gratitude for the experiences gained: Learning Experiences: The project provided valuable insights into the complexities of developing a comprehensive e-commerce platform tailored for shoe sales. From technical challenges to user experience considerations, each phase contributed to a rich learning experience. Acknowledgment: Gratitude is extended to [Supervisor Name], whose guidance and expertise played a pivotal role in shaping the project. Additionally, appreciation is expressed for any support received from colleagues, friends, or mentors throughout the project's lifecycle. Journey Reflection: The shoe e-commerce website project represents a culmination of dedication, creativity, and collaboration. Reflecting on the challenges overcome and the milestones achieved, it is evident that the project has contributed to the realm of online shopping solutions. In conclusion, our shoe e-commerce website stands as a testament to the iterative and adaptive nature of software development. The journey has been transformative, and the insights gained will undoubtedly inform future endeavors in the dynamic landscape of e-commerce and user-centric design.

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